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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 7 1950

CHILD HEALTH AND THE FUTURE*

BY

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I am deeply conscious of the honour conferred on me by the Trustees of the Dawson Williams Memorial Fund last year in recommending me as worthy of a prize for work for child health. I am particularly happy to be able to try in this lecture to discharge a debt to the forerunner whose name we honour. He was a noted paediatrician at the turn of the century, a member of the medical staff of the East London Hospital for Children at Shadwell who gave up his hospital work and practice to join the staff of the *British Medical Journal*, one of the few successful consultants ever to have devoted himself entirely to journalism. Dawson Williams gave me my first assignment (I believe that is the word) in medical journalism—an annotation on a book about medical missions, somewhere about 1923. I have been privileged to follow humbly in his career both as a paediatrician and in a part-time capacity in medical journalism.

When history is being made it is not always obvious to those taking part. At the present time and for some years past the improvement in infant and child health has been very remarkable, and yet the implications of this in the child-health services are not yet fully appreciated. Since much of what follows is in a critical mood it is necessary to state at the outset that those of us in academic posts in child health have a very definite responsibility in this matter, and in criticizing local authorities or central authorities in the health field we are including ourselves in our capacity as advisers or even participators in various aspects of the subject. Secondly, criticism will so far as possible have here its constructive side. It is proposed first to look at the infant-welfare scheme and next at the school health services. In each case the present arrangements will be scrutinized with special reference to what should be the objects of preventive paediatrics to-day—in other words, what are the diseases and disorders of children which call for preventive measures.

Infant-welfare Centres

To what extent does the average infant-welfare centre to-day differ from the milk depots of Budin in Paris of the last century or the earliest centres for distribution of milk and advice that were started in the north-western corner of England at the turn of the century? Milk is still distributed, with dried milk taking the place of milk in bottles. Vitamin preparations and certain infant foods are also distributed. Health visitors attend for weighing the babies and generally interpreting the advice of the medical officers who examine the infants periodically, advise on child care generally with special reference to diet, and deal to a varying degree with minor ailments. This service is correlated to an extent which varies in quality and quantity in different areas with home visiting by the health visitors. Immunization against diphtheria or vaccination against smallpox may be carried out in some centres either at the routine visits or at special sessions. Some medical officers do not approve of these services being mixed up with routine centre work, and yet they seem to me to be an essential part of preventive medicine. The compromise solution is, of course, to have special immunizing sessions.

To sum up, the infant-welfare centre began and has largely continued as part of a campaign to reduce deaths in infancy from digestive disorders. Indirectly the scheme has served to play a part in reducing the deficiency disorders. General advice on child care appears to vary very much in quality and in the energy with which it is given. It is unfortunately easy to get stale in this type of work, and it is perhaps a fair comment that in recent years the most valuable contributions to the management of breast-feeding, for example, have come, not as might have been expected from members of the infant-welfare service, but from "outsiders" such as Dr. Harold Waller and Dr. Charlotte Naish. This is a criticism not of individuals so much as of the way the service has somehow failed to produce opportunities for advances in knowledge. Indeed, with the well-known decline in breast-feeding it is pertinent to ask whether or not the infant-welfare service is everywhere pressing for natural feeding with full enthusiasm. I have heard a prominent medical officer of health state in public that he thought the merits of breast-feeding were greatly exaggerated. In quite recent times a medical practitioner, having carried out certain published investigations in breast-feeding, failed to secure appointment by a local authority for child-welfare work and was told that the lay members of the appropriate committee thought that she must be very narrow-minded and would expect all mothers to feed their babies. They considered that breast-feeding was an imposition on any woman now that the Government provided national dried milk. An infant-welfare service that is not whole-heartedly in favour of breast-feeding cannot surely be regarded as fulfilling its proper task in the community.

Yet by a paradox which is well recognized and not easy to explain a decline in breast-feeding has been accompanied by a sensational drop in the infant-mortality figures. For 1949 we are told that the provisional infant-mortality

*Dawson Williams Prize Lecture, delivered at the Annual Meeting of the British Medical Association, 1950.

rate is only 32 per 1,000 live births. Deaths certified as from gastro-enteritis in 1948 for the eleven months of the first year of life excluding the neonatal period were only a little over 2,000 for England and Wales, about half of the corresponding figure for 1947 and less than half of the total deaths in the same period in the same age group certified as due to bronchitis and pneumonia. Indeed, to-day after the newborn period it is acute respiratory disorders rather than digestive disorders which present the major difficulties. The preventive service has to a large extent won its fight against the scourge of infective diarrhoea as a national problem, although this is no excuse for allowing breast-feeding to decline still further or for slackening every effort to prevent outbreaks on a smaller scale in institutions. The newer antibiotics and a better understanding of the clinical management of the infant with the "diarrhoea and vomiting" syndrome may lower the death rate even further.

Need for Co-operation

Despite this remarkable improvement there are still gaps in the service, and this is particularly seen in the early weeks. There is not enough co-operation between the hospital, the general practitioner, and the child-welfare service in relation to the discharge of the newborn baby from hospital, and this is especially serious in reference to premature babies. The Biological and Medical Committee appointed by the Royal Commission on Population (1950) had something to say about this:

> "A serious defect in the maternity services is that women are often discharged from hospital on the ninth or tenth day before they have been taught how to handle their babies. Sometimes hospital almoners try to arrange for health visitors to supply the needed instruction, but this cannot always be managed, and the health visitor may not call for several weeks. Among women confined at home there is also frequently a gap between the time when the midwife ceases to come and the health visitor makes her first call, though during this period many women start taking their babies to infant-welfare centres and in this way receive continuing care and advice."

But it is the minority who receive this "continuing care and advice," and it ought to be the rule rather than the exception. A good slogan should be, "The health visitor on the doorstep to greet the mother on her arrival home." With a little organization between the ward sisters, the almoner, and the appropriate superintendent health visitor this can be achieved, and is achieved by some maternity hospitals and units. It might even go further and give the health visitor the chance to visit the hospital and see the mother before discharge. Continuity of feeding is important, especially if the baby is artificially fed, and maternity hospitals and units should see that their choice of dried milks, for example, and methods of feeding correlate closely with those available in the infant-welfare centres of the area to which mothers will subsequently go.

> In quite recent times, in a London borough which I would regard as well above the average for its standard of child-welfare work, a mother left hospital with her baby on a bottle with feeding instructions that could not be carried out at home, and she struggled in her amateurish way for nearly four weeks before bringing the baby to hospital. During the whole of that time no health visitor had called and the mother said she was too exhausted to get to a centre. A previous baby had died of gastro-enteritis in similar circumstances in another part of London.

If it is argued that the shortage of health visitors will not permit of these idealistic arrangements I would reply that in many areas health visitors are cluttered up with duties which intelligent lay people could perfectly well do. There is an urgent need for a sort of "job analysis" of a health visitor's work to see that she is not spending time as a clerk, a secretary, a food-store manager, and so forth.

Another method of co-operation in these early weeks which merits attention concerns the possible staffing of the paediatric side of maternity hospitals and units by medical officers of the local authority services. Both at Middlesex Hospital and at Queen Charlotte's Hospital I was privileged for some six years to look after the newborn babies in the wards and to follow them in orthodox infant-welfare centres attached to these hospitals. I am certain that it made for a high degree of continuity of care. Under the scheme proposed by the Ministry of Health circular 118/47, whereby joint appointments were advocated, with infant-welfare medical officers being eligible for part-time hospital work, I should have thought that hospital appointments for supervision of the newborn and of the premature infant would bring a measure of variety and responsibility to the work of infant-welfare-centre medical officers which is often lacking.

(At a different level, and for different reasons, the spirit of the circular is being carried out successfully at the Hospital for Sick Children, Great Ormond Street, whereby six medical officers of the London County Council attend for work in the out-patient department, one each day, and six registrars from the hospital supply one session each in the service of the London County Council. Similar schemes are no doubt in operation elsewhere.)

Prevention of Infections

This gap in the services in the early weeks is something which needs careful attention. The suggestions made require changes, and it is just the relatively unchanged nature of infant-welfare work over the past fifty years that causes some degree of anxiety. The infections of childhood that can be prevented by recognized methods of immunization are diphtheria, smallpox, and probably whooping-cough. Surely the welfare centre is the place where such methods should be preached and practised with the greatest hope of success.

The infectious disease, however, which has the highest numerical significance in childhood is tuberculosis. Dr. J. E. Geddes (1950), at the Eastbourne Congress of the Royal Sanitary Institute this year, gave the total deaths from infectious diseases for children under the age of 15 in Birmingham during the years 1946–9. In numerical order these ran as follows: scarlet fever, 2; diphtheria, 15; measles, 48; whooping-cough, 114; tuberculosis, 203. It is fair to ask, therefore, what the preventive child-health services are doing about tuberculosis. In the infant-welfare service the use of the tuberculin-patch test at intervals—for example every six months—followed by an *x*-ray examination if the test is found to have become positive, might prove very revealing, and I know that at some centres this is in fact the programme, or something like it. Yet when a young colleague of mine asked to be allowed to perform patch tests at a welfare centre at which he worked he was told by the medical officer of health that this could not be allowed, because it was not the "job" of the centre. This seems a strange decision. Surely the early detection of tuberculous infection, the tracking of contacts, and the use of B.C.G. vaccine for negative reactors amongst them could be made a fine co-operative effort between the infant welfare and the tuberculosis branches of the health service.

There is more to be said about this disease in relation to school-children. For the present it must be recorded with regret that a step in the prevention of tuberculosis is in some areas, for administrative reasons, not permitted amongst the most susceptible age group.

It has already been pointed out that respiratory disorders nowadays account for far more deaths than enteritis in the young infant. What can the infant-welfare service do about this problem? First, more must be known about the epidemiology and pathogenesis of respiratory tract infections in young infants. The work of Dr. F. J. W. Miller (1950) in Newcastle in this field will, it is hoped, be especially helpful. This is part of a morbidity survey carried out jointly by the University of Durham Department of Child Health and the Newcastle City Health Department. With the help of health visitors specially chosen for the work, a study of acute infections in the first five years of life is already revealing that acute infective disease at this age period is essentially a family infection. The "cold" of the baby or sore throat of the toddler is not an isolated phenomenon, but must be regarded, with special reference to prevention, from the basis of the household and the contacts all around in the family circle. This is an excellent example of field research by the preventive services at the infant-welfare-centre age. It may well indicate the lines upon which sound preventive measures to deal with acute respiratory disorders in infants can be evolved.

The Newcastle work lays stress upon the family as a unit in relation to infection of the "droplet" type. Has the infant-welfare movement as a whole given enough thought to the family as a unit in relation to its general work in child care? The father should certainly be known personally to the health visitor, and preferably also to the medical officer. It often occurred, when I was doing infant-welfare-centre work, that some aspect of the child's behaviour or even of physical appearance was clarified only after I had asked that the father attend. Actually, because of the peculiar circumstances of one of my centres with mothers who spoke little English and fathers who worked evening shifts in restaurants, I often had the pleasure of seeing the fathers attending with their babies, and I am sure that better work can be done with families in this way. This is particularly important with regard to psychological problems.

Mental Health

As modern methods of treatment and prevention have so radically improved the outlook for the child as regards physical disorders, it is possible to turn more definitely to study the psychological side, not on the relatively small scale available in the most valuable work of the child-guidance clinics dealing with more or less gross disorders, but in the much larger field afforded in the infant-welfare centres. More and more experts are tracing severe breakdowns of adolescence, leading to delinquency and mental misery, to events in the critical early years of life when disturbance of the profound yet delicate parent–child, and especially mother–child, relationship may wreak such havoc with a child's mind. The quality of advice on child care in the psychological field must vary very much, as in general terms the training of medical officers and of health visitors for this side of their work is minimal and is likely to remain so until radical reforms in the curriculum become effective. Unfortunately, too, the very mothers (and fathers) who are most in need of help are those who do not come to an infant-welfare centre. Yet the services of the centre —the advice—can be taken to them, and this is, in fact, being done in some areas as a method of tackling the "problem family." My point here is the simple one that the opportunity for establishing sound mental hygiene in the pre-school age is enormous, and yet, judging by the number of psychological troubles in later life, preventive measures are not proving very effective. In the figures for the "defects" found on routine medical inspection in schools of the London County Council (1948) the percentage of "psychological defects" is about the same as that for otitis media and for heart disease. The prevention of chronic ear trouble and of rheumatic heart disease is certainly approached with more enthusiasm than preventive mental hygiene.

A particular field in which the welfare centre could help is in regard to sex education. The recent developments in the schools whereby more sex instruction is being given has revealed that to begin sex education in the senior schools is much too late and may in fact lead, as it has done in the area of one school of my acquaintance, to almost an epidemic of sex offences between schoolboys and schoolgirls. What is happening is that the parents have no idea of how to deal with questions on sex matters or on the elementary facts of pregnancy and child-bearing. They fob the children off with unsatisfactory answers in early life, the child begins to learn from companions in the early years of school often in a soiled and dirty fashion, and then the "facts" are imparted in early adolescence, at an inflammable age, to children quite improperly prepared to receive them in this way. At the pre-school stage parents should be helped by series of talks on the whole subject of how to answer the inevitable questions of the young child. Discussion groups, especially if fathers can be persuaded to come, held in the evening would go a long way to help in this difficult and important field.

Yet another field in which somehow or other the infant-welfare centre ought to be doing more preventive work concerns the question of accidents. If the mortality figures for the 2- to 5-year-old group are examined it will be found that "violence" is responsible for the largest death rate. For 1948 the rate per million from this cause was 372 for males and 244 for females, compared with 222 and 208, respectively, for tuberculosis, 27 and 19 for diphtheria, 39 and 34 for measles, and 50 and 24 for appendicitis. The "violence" group can be subdivided into road-traffic accidents, which account for just under half of the total, and "other violent causes," which largely means burns and scalds. Is the infant-welfare service doing enough by means of educative measures—talks, posters, pamphlets—to play a part in preventing accidental deaths? It has been pointed out how very rare it is for a second case of severe burns to come to hospital from the same home (Colebrook, 1949), but what a tragically expensive way of teaching the parents. Instruction on non-inflammable clothes, especially night attire, on guards for open fires and stoves and all electric and gas fires, on street drill, and so forth seems to-day to be as important in preventing death and injury in childhood as instruction in infant feeding.

So far I have been dealing with the future of infant-welfare work as if the general pattern of the centre—the medical officer and the health visitor—was to remain essentially unchanged, and that such changes as were necessary were concerned with a different emphasis because of a changed disease pattern. It is important, however, to take this a stage further to see whether or not something more radical may not become desirable. This question largely arises because of the interesting studies in Luton of illness in infancy. The latest report from this town (Dykes, 1950) indicates that, whereas infant-mortality rates show a definite social gradient, infant morbidity does not. In less

favoured towns this may not yet be the case, but the Luton experience suggests that there comes a time when "no substantial reduction of infant sickness can be expected from general measures which fall within the scope of public health and social medicine." Since, however, a social gradient in regard to infant mortality still exists, it follows that practical measures may be expected to bring about a substantial reduction of the infant death rate.

I do not propose to discuss here the alarming conclusion that what determines—in a relatively favourable environment—whether an infant becomes ill or not in the first year of life is a constitutional factor to be controlled, if at all, by eugenics or by aspects of antenatal care which are not yet by any means apparent. What does seem important is that when an infant becomes ill the ultimate result of such illness would seem to depend upon the standards of care that are then applied. In the lower-income groups, failure to secure early medical attention may have, in the past, partly been governed by financial considerations, but education and lack of it as shown by fear and prejudice may have also played a part. It may be that with the passage of the National Health Service Act the financial barrier to early treatment will disappear.

The Luton report suggests that to lower the infant death rate still further will not necessarily be achieved, in a relatively favourable environment, by raising the income and economic status of the lowest social groups. "It seems rather," runs the report, "that this result will be achieved by ensuring that sick infants in the lower social groups are afforded a higher standard of medical and nursing care than some of them have hitherto enjoyed."

The Need for Change

Let us see where this is leading us. I have long held that preventive medicine should include not only measures to preserve health and prevent disease but also the adequate treatment of minor maladies and of serious illness in its early stages to prevent major catastrophes. The Luton experiences support this view. After a certain stage has been reached in the improvement of environment and the general standard of child care, further advances necessitate early medical help when infants are ill. Obviously at the early stage of illness treatment is best carried out in the home, with the use of hospital only when home circumstances are unfavourable.

The crucial question for the infant-welfare service is, "Who is to carry out this treatment?" I think the answer must be, "The family doctor," provided that he is given a better training in the care of sick children than has been possible in the curriculum of past times, and provided that he is given the services of home nurses well trained in the care of sick babies—a highly specialized type of work in grave danger of being submerged and lost in certain proposals for nursing reform. But if the next steps in reducing the infant mortality—the next steps in preventive work in the infant-welfare sphere—are to be along these lines, then surely the infant-welfare service must reorganize its whole staffing programme. Its medical officers should logically be the family doctors who will be carrying out the work in the homes as well as at the infant-welfare centres, and its health visitors must have a specialized training in the nursing of sick babies as well as in the education of mothers in the care of their children.

The infant-welfare centre would then become a consultative clinic where minor ailments could be treated, as well as continuing its educative functions and the preventive measures already discussed. The services of a consultant paediatrician will be required. This scheme would mean that, far from health visitors being given less training as nurses and more in social work, they would in fact require even greater training in the care of children in sickness and in health than they receive to-day.

It may be argued that Luton is not representative, that such revolutionary changes are unnecessary, and that the present pattern of infant-welfare work should continue. But the present-day facts of infant mortality and infant morbidity and their social significance are inescapable. A system largely planned and run on vital statistics which were valid 30 or 40 years ago may conceivably be ripe for revision. There is surely a case here for experiment on a bold scale, and a magnificent opportunity for infant welfare to step forward. Medical officers of health have expressed their feeling of frustration in the atmosphere of the Health Service. Surely a change in the whole mode of work of the infant-welfare service would give them an interest again in this field of preventive medicine.

School Medical Inspections

The school health service also presents aspects which have changed little in the last 30 or 40 years. The form of the medical service for school-children was largely determined in the period 1907–8 and was based on three routine medical inspections, the detection of defects, and arrangements for their treatment. In this basic service there has been little change. Workers in the service complain of the monotony of the school medical inspection, and whereas hitherto it has often been possible to dilute such work, so to speak, with maternity and child-welfare sessions, there is a clear lead in official circulars to let antenatal work go to obstetric teams and the child-welfare work, in part at any rate, to child-health officers.

Suppose that such officers, for the most part specialist paediatricians, also take over school medical sessions as they are already doing in some areas: it will surely be a waste of expensive medical man-power to employ such sessions in routine medical inspections. Across the Atlantic they have been asking for some years—what can the school physician detect that the school nurse cannot detect? I specially commend the New York study by Dr. Dorothy Nyswander (1942) and her colleagues for a more detailed answer than it is possible to give here. Workers in Canada have also criticized medical inspections by a school medical officer as being wasteful of time, money, and effort. It is argued that there are few defects which are not obvious on inspection or in which a careful history will not suggest the need for a medical examination. A competent nurse can "screen" the children and select those requiring a more detailed overhaul by a physician. Such a scheme is, I believe, already in operation in parts of Canada. In New York, as a result largely of the studies already mentioned, only entrants now have a complete medical examination and after that the school physician sees only children referred to him as a result of consultation between nurse and teacher.

Defenders of the present system will no doubt maintain that only by a medical examination can heart disease, for example, be detected. But without a history of rheumatism, without some cyanosis or shortness of breath, the apical systolic murmur in childhood is possibly best left undetected. If there is no history and the child is free from symptoms there is little danger of harm coming from the non-detection of a heart lesion. In any case it is illogical to insist that the heart must be examined by a doctor and not include full examination of the urine. The nurse could easily do the latter. She can also apply a tuberculin-patch test and refer those changing from negative to positive for further

examination, repeating the patch test at suitable intervals in the negative reactors. In view of the relatively high importance of tuberculosis in the mortality of childhood already mentioned it is surely illogical to defend current methods of inspection which do not include any special means to detect this important disease. Mass radiography is being used experimentally, I believe, for certain school-children, and the findings will be of great interest. There is almost certainly a field among school-children who react negatively to tuberculin for B.C.G. inoculation in certain circumstances.

If the school medical officer can somehow be released from the burden of routine inspections there is great scope for more interesting and more important work of a preventive type among children of school age. In passing, it is fair to record that the work of the school health service in regard to the handicapped child in this country is of a very high standard and the provisions made are viewed with admiration by visitors from many parts of the world. Moreover, the supervision of children in residential schools for the physically handicapped brings a special interest of a clinical type into the work of school doctors. This side of the work, however, is rescue work of a special and somewhat limited type dealing with a minority of lame ducks in the community. Even in this field I doubt if we are doing enough for the parents of educationally sub-normal children or more especially the uneducable group. There is much unrelieved misery here.

Health Education by the School Doctor

On a much wider scale the health service can reach in the schools such an important population that the school doctor should be encouraged and able to play a part in the whole field of health education. He may or may not be a good teacher, but if he is, then surely he should be encouraged to take some part in teaching. Whether or not he does this, he should certainly be concerned with the syllabus, help to plan practical studies and visits of observation, and, above all, to see that the child learns the elements of hygiene by being able to practise them at school. This means that the school doctor should be directly interested in ventilation, lavatory and washing accommodation, drying facilities, and changing facilities. He should be concerned with school meals and milk in schools, using the opportunity to get the whole subject of food and nutrition, including food hygiene, put before the children.

In the field of physical education the school doctor should also be encouraged to show interest. There is a growing feeling that this subject, together with the whole study of remedial exercises, needs a more critical supervision than has hitherto been the custom. School medical records might well show that certain postural defects right themselves just as quickly without special exercises. I know that this is true in one area for scoliosis. School doctors could soon settle whether or not exercises are necessary for many conditions for which they are now ordered, and with this study the validity of the theories of certain schools and sects in physical education, and indeed in physiotherapy, could be tested.

There is also the question of the teaching of biology in schools and the associated problem of sex education. It is generally agreed that it is not wise for sex education to be dealt with in a highly specialized way by a visiting and strange teacher. But a school doctor who knows his school and is known by the children—by his contact in special medical examinations, through his interest in the food, lighting, and hygiene—would be no stranger, and he or she might well take some part in this important aspect of the curriculum. Such suggestions would bring the school doctor into much closer contact with the school staff than is generally the case to-day. They may learn to consult him on special problems concerning the children or concerning themselves. The head master or head mistress could come to find the doctor a real help in many aspects of the school life. In this way a contribution to health and happiness among school-children would be made which would be of far greater ultimate value than much of the inspection work done to-day.

In connexion with the school health work also I would commend the work of the school care committees in the London area. They are invaluable for much of the social and preventive work of the school services. They represent an aspect of social paediatrics for the child of school age which is an important part of the school health programme.

I have roamed far and wide in this subject. I repeat again that if there are faults in the child-health services to-day those of us in responsible positions must accept part of the blame. I have tried to indicate why I think the amazing change in the pattern of disease in infancy and childhood must mean a change in the methods and objects of preventive measures. I would especially stress the growing importance of such measures in the field of mental health.

I am aware that some, and possibly most, of the suggestions for changed procedure have already been adopted in certain areas by forward-looking authorities and their progressive medical officers. What can be done in one area can surely be done in most other areas. The child-health services of this country in their beginnings showed the whole world what could be accomplished in the fields of child welfare and school health. The changes, which seem to me urgently necessary, could well once again put these services right in the front of the campaign against death and disease and unhappiness in early life.

It will be clear that I am indebted to many sources for my ideas, some of which are recorded in the list of references. Apart from this there are many colleagues in the academic field and medical officers of health who have wittingly or unwittingly allowed me to gain access to their thoughts. I am also deeply grateful to St. Marylebone Borough Council, who employed me to conduct infant-welfare centres, and to the London County Council, who employed me as part-time medical officer in the school medical service for several years before the last war. Neither body is, of course, responsible for anything I have said in this lecture.

References

Colebrook, L., and Colebrook, Vera (1949). *Lancet*, **2**, 181.
Dykes, R. M. (1950). *Illness in Infancy*. Luton.
Geddes, J. E. (1950). *J. R. sanit. Inst.*, **70**, 341.
London County Council (1948). *Report of Medical Officer of Health and School Medical Officer*, p. 64.
Miller, F. J. W. (1950). *Publ. Hlth*, **63**, 61.
Nyswander, D. B. (1942). *Solving School Health Problems*. Commonwealth Fund and Humphrey Milford.
Report of Biological and Medical Committee (1950). *Papers of the Royal Commission on Population*, vol. 4.

According to a Home Office paper issued recently there was less juvenile delinquency in England and Wales in 1949 than in 1948. Those under the age of 14 found guilty of indictable offences and dealt with by magistrates' courts numbered 21,152 in 1947; 26,715 in 1948; and 24,872 in 1949. Those under 17 but 14 or more were 13,861 (1947); 16,991 (1948); and 15,064 (1949). A decline was also noted in those of all ages under 17 found guilty in higher courts: 681 (1947), 728 (1948), 494 (1949). Local authorities are urged to hold conferences with interested statutory and voluntary bodies to study ways of preventing juvenile crime, and many have already begun this work.

MANAGEMENT OF MALPOSITIONS OF THE VERTEX*

BY

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With so much maternity work being done in hospitals there is to-day a tendency to study the various problems associated with obstetrics solely from the statistical angle. Of course, much very useful information is gained by this approach; but it can be cold and lifeless, and there are some problems which can be expressed in another way. It is not my intention to belittle the value of these statistical analyses, especially when, for all I know, there may be a Hogben sitting amongst us. I would prefer, however, to present the subject from the angle of the practitioner of obstetrics who is working on his own without the panoply of the hospital around him to share his burden and sometimes to shield him from his failures. I would rather talk of my experiences as an obstetrician doing private domiciliary midwifery than as a consultant engaged in institutional midwifery. By so doing we can meet on common ground and compare notes.

During the past twenty years I have myself conducted a fair number of booked confinements: excluding emergency calls, there are over 2,500 which can be drawn upon. From such a number it is possible to form a judgment on what constitutes a difficult vertex presentation. In these cases I carried out my own antenatal work, and almost all the patients had a radiological examination at the thirty-sixth to thirty-seventh week. It was thus possible to select, with some accuracy, the cases of malposition of the vertex, and the malpositions which I here deal with are the occipito-posterior position with the head lying in the oblique diameter of the brim, the direct occipito-posterior with the head lying in the conjugate, and the occipito-lateral with the long axis of the head lying in the transverse diameter of the brim.

Incidence

The first question to be considered is, How often do we encounter such cases, and do they in fact give rise to difficulty in labour? I found among my cases that the occipito-posterior position with the head in the oblique occurred in 15%, the occipito-lateral in 26%, and the direct occipito-posterior in only 1%. The very great differences in the incidence of occipito-posterior presentation which are recorded by various authors are in all probability due to the fact that the diagnosis was made at different times—before the onset and during labour—and that hospital records are in themselves often incomplete, lacking accurate information from which a reliable figure can be ascertained. Thus we have such differences as:

Seidentopf	12.4% in Chicago and 1.4% in Leipzig
Munro Kerr ..	20–25% in private practice, early in labour
McBride	4% in Glasgow
McGregor	6.8% in Edinburgh

Prognosis of Difficulty

As to whether or not the occipito-posterior position causes a difficult labour, we find that Munro Kerr and Chassar Moir state: "Occipito-posterior positions of the vertex have in recent years come to be looked upon as the *bête noire* of obstetric practice. It may be a somewhat exaggerated view to take of this very common complication—we think it is; nevertheless, the difficulties which develop may occasionally be very serious—particularly in primiparae—and they always demand judicious handling." And Morris says: "The detection of an occipito-posterior position prior to the onset of labour should not cause alarm, for in a very high proportion of cases correction at least to an occipito-lateral position occurs spontaneously when labour commences." These are two ways of regarding the problem. I would prefer to express it in a different way. The manner in which I venture to suggest it strikes most of us who are engaged in domiciliary midwifery is that an occipito-posterior presentation in a primigravida may at any time from the onset of labour until its completion bring very considerable difficulties—with a prolongation of the first stage, perhaps a very difficult forceps delivery in the second stage, and a possibly complicated third stage—and on that account it causes us concern and anxiety from the time when we first diagnose the condition until the confinement is successfully accomplished.

It is agreed that the occipito-posterior position and deep transverse arrest are responsible for a high percentage of the stillbirths which occur in mature infants. These cases play a large part in producing the dystocia which may be followed by the trauma of a difficult delivery, and, later, the increased possibility of haemorrhage from an atonic uterus. Trauma and haemorrhage in many instances will in turn be followed by obstetric shock, which is one of the major causes of maternal mortality and is to-day responsible for over 30% of the deaths in our hospital. In our part of the world occipito-posterior and deep transverse arrest is the commonest cause of failed forceps now that the grosser degrees of contracted pelvis have become less common and the general standard of midwifery has improved.

Knowing that this is so, and appreciating the danger not only to the child but occasionally to the mother, we can now comfort ourselves with the knowledge that the majority of occipito-posterior cases do not fulfil our worst fears. This, however, is cold comfort if, having at the thirty-sixth week made a diagnosis of an occipito-posterior position, we cannot prophesy with any certainty in any given case how it will finish, and if only when the case is finished are we able to experience relief in the knowledge that this was one of the many easy cases which gave no trouble. Wisdom after the event is very little consolation for the anxious foreboding we may have had for the last week or two before the confinement and at the actual confinement itself. Therefore, while fully admitting that many of these cases have simple uncomplicated confinements, let us examine in more detail the difficulties which we know may confront us—and which we fear—in an endeavour to find ways and means to deal with them when they do arise.

I shall consider first the primigravida. When the diagnosis of occipito-posterior or occipito-lateral presentation is made at the thirty-sixth week we know that in a number of cases this will have become anterior by the time the patient goes into labour, but where the head is engaged or even partially engaged at this time it is unlikely that there will be any improvement in the position before labour starts: in this I differ from Munro Kerr and Chassar Moir, who say that the third and fourth vertex positions are infrequent before the onset of labour and that the largest proportion develop early in labour. They therefore make an arbitrary division into primary and secondary occipito-

*A British Medical Association Lecture given to the Birmingham Division on March 28.

posteriors. I regard this as the very reverse of what actually happens in practice.

Can one correct the position antenatally? Buist's pads have been advocated, and recently by no less an authority than Farquhar Murray, but we in Glasgow have been unsuccessful with this treatment. Postural treatment has been recommended, and this also has in our hands failed to produce satisfactory results. I know of no means of correcting this malposition antenatally. If there is no method of correction, is there any value in diagnosis? Most certainly there is. Most primigravidae hope for an easy and quick labour. They are fortified in this hope by some of their fortunate friends who have had the experience. Where the doctor in charge knows that the occipito-posterior presentation exists he should be able to prepare the patient for a labour which is unlikely to be short. In so doing it is essential that he should not alarm her, and it may be of value to have a word or two with the relatives. It should again be stressed that there is no need to give them cause for undue apprehension or concern, but a certain amount of psychological preparation can be quietly instilled into the minds of the patient and her associates, so that if labour does not follow a rapid course she does not become unduly despondent or panicky. When well carried out, this psychological preparation can only increase the confidence of the patient in her doctor, and thus will have an incalculably beneficial effect upon the whole course of the labour.

Clinical Post-maturity

In cases where the head is high and the position is posterior or lateral, the antenatal period may be prolonged beyond the expected date of confinement. In other words, such cases often become clinically post-mature. Prophecy of such an occurrence by the doctor in charge will also increase the confidence of the patient and prevent that rising tide of impatience and perturbation which is so apt to occur when a primigravida goes more than a few days past her expected date.

So much for the psychological value of antenatal diagnosis of the occipito-posterior position.

The question of clinical post-maturity may now be considered a little more fully, for it is often here that we meet our first difficulty. The longer pregnancy continues past the expected date the larger the child may become, the harder the head, the less easy the moulding, and the more difficult the ultimate confinement. Are we justified in inducing labour in such cases?

Before answering this question there is a further essential in the diagnosis. It is desirable to make a pre-delivery assessment of the pelvic capacity. This can be done by an internal digital pelvimetric examination. The shape of the brim can to some extent be appreciated, and, what is much more important, the curvature of the sacrum. A sacrum which is flattened antero-posteriorly will markedly reduce the pelvic capacity, and its full significance must be appreciated in determining the future course of the labour. The prominence of the ischial spines and the length of the sacro-spinous ligament should be ascertained. Caldwell and Moloy allow two fingerbreadths as a rough guide to a normal sacro-spinous ligament. The mobility of the coccyx, the width of the subpubic angle, and the posterior sagittal diameter are all of great value in determining the pelvic capacity. In these days of radiology much can be learned from a lateral view of the pelvis, which can be taken at the same time as the diagnosis of the foetal position is confirmed, and, while perhaps to have an *x*-ray pelvimetry in every primigravida would be desirable, it is a counsel of perfection and not always feasible. It should not replace internal digital pelvic examination, as it is really, to my mind, an adjuvant rather than a primary factor in diagnosis. The width of the sacro-sciatic notch, whether it is acutely angled or obtuse, will help to guide one in assessing an android pelvis, and this can be appreciated from a simple lateral view.

It is not my purpose to discuss the value of radiological pelvimetry. My own impression is that too much stress is being placed upon this. None the less, it does play an important part in the assessment of pelvic capacity, and before deciding the question of induction in a clinically post-mature patient the pelvic capacity would require to be known.

Induction of Labour

Where the capacity appears ample a modified medical induction is usually justified in a primigravida when she is a few days past term; but surgical induction is another matter, and here at the moment I am referring strictly to the primigravida. While surgical induction by artificial rupture of the membranes in primigravidae may frequently be followed by a satisfactory labour, there are occasions when this is not so. Where the cervix is long and hard, where there is no attempt at taking up the internal os, where it is displaced into the posterior fornix, induction may be followed by a long latent period, and foetal distress may become evident before it is possible to effect a vaginal delivery. Surgical induction of labour is therefore inadvisable in primigravidae when the grounds are solely clinical post-maturity and occipito-posterior presentation.

There are, however, special circumstances in which surgical induction is, I think, well justified, and indeed almost obligatory. Let us take for example an occipito-posterior position occurring in the patient whose pelvic capacity, while not contracted in any serious way, is not more than adequate for the average baby and where the child appears to be getting larger—here the certainty of disproportion looms ahead; or in the patient with a minor degree of restricted pelvic capacity, especially in the mid-plane or cavity. Again, there is the type of patient who has been married for a number of years and to whom the baby is more than ordinarily precious. She need not necessarily be an elderly primigravida. There is also the case of clinical post-maturity where careful observation of the foetal heart has disclosed irregularities, where the movement of the foetus has been noticed by the patient to become less obvious, or where there is reason to suspect the possibility of impending intrauterine death of the foetus—a most difficult type of case to diagnose with accuracy. If we treat any of these cases expectantly, the result may be disastrous to the child, and it is on this account that a number are subjected to caesarean section—and yet caesarean section may be entirely unnecessary.

Trial Induction

I would therefore at this stage put in a plea for what I have called elsewhere "trial induction" in such cases. By "trial induction" I mean that surgical induction of labour may be carried out on the understanding that, should the induction prove unsuccessful, it may be followed by caesarean section, under an "antibiotic umbrella." By this means a number of successful inductions will result and some unnecessary caesarean sections will be avoided. I should repeat, however, that trial induction and caesarean section are procedures to be reserved only for special cases in circumstances other than the mere presence of an occipito-posterior in a clinically post-mature patient, and they do not fall within the ambit of domiciliary midwifery. With the clinically post-mature primigravida who is to be

delivered at home, it is usually best to wait until labour begins spontaneously, and this may mean leaving her for anything up to two or even three weeks.

In multiparous patients the problem can be easily solved. The cervix is usually soft and patulous, membranes rupture easily, and the practice of timely induction in such cases will often avert the danger of a large child which can make occipito-posterior presentation doubly difficult.

Prolonged First Stage

When the patient ultimately goes into labour the first stage may be considerably prolonged. Whether this is due to the fact that the presenting part inaccurately fills the pelvis and fails to elicit what has been described as the cervical reflex, or to incoordinate uterine action, which so frequently accompanies this type of case, or whether it is due to some other factor, I do not propose to discuss. Suffice it to say that a prolonged first stage of labour with the occipito-posterior position is commonplace. How, then, are we to contend with the difficulty? In the initial hours of the first stage no treatment whatever is required. The patient should already have been psychologically prepared for such an eventuality. It is a mistake to administer sedatives too early in these cases. Patients should be allowed to "get on with the job," which the vast majority are prepared to do, but they should be assured of help and relief if they experience discomfort which distresses them. The cult of relaxation is valuable in such cases, and, while the patient should be allowed to move around, she should also be allowed to rest. A combination of activity alternating with rest will help labour to establish itself satisfactorily.

There are very few hospitals in the country to-day in which a prolonged first stage of labour can be adequately managed. The provision of first-stage rooms is lamentably inadequate. Comfortable rooms attractively furnished with comfortable chairs, and newspapers and magazines, are what is required. All too frequently the patient is placed in a common-room with other patients in more advanced stages of labour. The whole situation is macabre. How much more fortunate is the primigravida in the familiar surroundings of her own home.

When the patient shows signs of weariness she should immediately be given sedatives. I need hardly add that any form of oxytocic is definitely contraindicated at this stage. Where a mild sedative is required it is often wise to begin with gas-and-oxygen or gas, oxygen, and "trilene" from a "Portanaest" or some similar machine. The patient who is properly instructed in the use of this will experience considerable relief and will continue to have contractions. It is a common mistake to withhold the use of gas-and-oxygen until the beginning of the second stage, and equally I would suggest that it is a mistake to give the patient trilene too early. Trilene is much more powerful than gas-and-oxygen and is better reserved for later in labour. When gas-and-oxygen has been used for a reasonable time—and I would suggest that a couple of hours at this stage constitutes a reasonable time—pethidine may then be given; this is a valuable and safe sedative, and can usually be repeated until the desired effect is achieved. Morphine will always be regarded as a powerful sedative and one of the best at our disposal, especially when it is combined with a little hyoscine, but this should be used with caution. The proper time for the administration of morphine and hyoscine is at night. It is in the long watches of the night that courage fails, and it is then that morphine is most called for. The amount of morphine to be given in a protracted labour is limited, and it should therefore be used when it is likely to be of the greatest advantage, which is usually at night.

Apart from sedatives, it is important also to emphasize that the patient should be allowed adequate nourishment in the first stage of labour. She should be encouraged to take her normal meals, as there is no likelihood of an impending anaesthetic. This maintains her strength and fortifies the glycogen reserve in her liver. It also engenders in the patient's mind the feeling that there cannot be very much wrong if she is taking her food normally. By the time she gets towards the end of the first stage, which is, I think, the most painful period of any labour, she should be given adequate sedation. At this time particular attention should be paid to the bladder. So much for the first stage in primigravidae.

The Second Stage: Timing Intervention

When the patient enters the second stage of labour with a difficult vertex presentation—that is to say, occipito-posterior or occipito-lateral—great obstetric judgment will require to be exercised; for at this stage intervention becomes possible, and the doctor must decide whether or not it should be undertaken. Opinion on this subject tends to be divided rather sharply into two schools—the ultra-conservative school which will allow almost unlimited time for long rotation to take place and for spontaneous delivery to be effected, and the ultra-radical school which will carry out what some of our American friends call prophylactic forceps delivery and extract the child as soon as the cervix is fully dilated.

Don't be afraid of the via media, because it is the road most often right, and, while in the last instance it is usually a matter for the doctor in charge, there are a number of points which would help him to form a correct judgment. If the first stage of labour has not been unduly prolonged, and if the patient's condition is good when she nears the second stage and the foetal heart is beating strongly, there is every reason to allow her sufficient time to deliver herself naturally. It is impossible to improve upon natural results in such cases. In contrast, there is the patient who has had a prolonged and exhausting first stage; it is then unusual to find that her expulsive efforts in the second are effective. In such cases the head will tend to lie in the mid-pelvic cavity and assume the position of deep transverse arrest. Where this arrest is allowed to persist over a number of hours the consequent moulding of the foetal head merely renders the ultimate forceps delivery more difficult, while the patient is less able to withstand such intervention.

I am not really suggesting that the patient's life is in any great danger, but there is no doubt that a degree of obstetric shock often follows a difficult forceps delivery in a patient who has been in labour for several days. Furthermore, to leave for a long time a patient whose baby is in the position of deep transverse arrest may result in a stillbirth, which is a tragic sequel to a protracted labour and likely to leave a permanent scar on the patient's mind, if not anywhere else. The late Dr. Eneas Mackenzie, one of the wisest and most experienced general-practitioner obstetricians, once said to me, "One of the reasons why doctors apply forceps is not because they are in a hurry, but because they do not like to see poor folk suffer," and, while modern analgesia has obviated much of this suffering, it cannot be used indefinitely in the second stage of labour without risk to the child. There is therefore a very definite place for intervention early in the second stage when the first stage has been prolonged, and correspondingly later in the second stage when the first stage has been normal.

The Emergency Call

Sometimes a doctor is called, as an emergency or for a second opinion, to see a patient with an occipito-posterior presentation in the second stage of labour, dystocia having already occurred, and he may find a tired and even exhausted mother and the prospect of a difficult forceps delivery. Adequate care in the first stage would have averted such a state of affairs, but when it does exist it must be overcome. One decision which has to be taken is when to intervene. Generally speaking, such cases are not suitable for domestic confinement, for the accoucheur will need a good anaesthetist, and at the completion of delivery a variety of urgent functions may require to be carried out simultaneously. The child may need resuscitation, an episiotomy may have to be repaired, and an atonic uterus may require attention on account of third-stage bleeding. It is unusual in domiciliary surroundings to have enough assistance to perform all these functions together satisfactorily.

It might not be inappropriate here to refer to some technical points in the delivery by forceps of the deep transverse arrest and of the persistent occipito-posterior, although I realize that in doing so I am entering a field of almost wild controversy. In the great majority of cases the experienced obstetric practitioner will find no difficulty in manually rotating the head into an anterior position, and this is especially so if the intervention has been started before moulding has become extreme. It may be necessary to push the head fairly high up in the pelvis to effect this, but in a primigravida there is really little danger of such a procedure causing undue extension of the head or prolapse of the cord. He will then apply forceps and deliver slowly.

One has become accustomed to the advice than fundal pressure should be applied in the delivery of a breech to maintain flexion, so I think it is wise to have an assistant to apply such pressure in a forceps delivery, and for the same reason. Reasonable fundal pressure begun just before the forceps traction can be very helpful, but the whole procedure must be done slowly. There is a tendency to-day to hurry forceps deliveries quite unnecessarily.

In the cases in which rotation is impossible, owing either to very marked moulding or to slight cephalo-pelvic disproportion, the head should be delivered by the application of Kielland's forceps to the head in the transverse position, and in expert hands this gives first-class results. Equally, in inexpert hands it causes extensive laceration of the pelvic floor.

Alternatively, forceps may be applied over the face and occiput (the actual application is more usually oblique), and moderate traction may be exerted until rotation occurs in the plane of the outlet, when the forceps are removed and reapplied. This is a time-honoured method of delivery, and a great deal of nonsense has been talked about its lethal effect upon the child. With fundal pressure and reasonable traction there will be less danger to the child from such a manœuvre than might be anticipated, for the head has accommodated itself to the pelvis and is really being helped to "find its own way out." To the ardent apostle of Kielland's forceps I should say, If you have learned to use them, continue to do so. To those who prefer axis-traction forceps and are accustomed to their use, I would say the same. This is the art of obstetrics which must be acquired rather than taught, and if the best results are to be obtained the artist must be allowed to use the tools which he finds most natural to him. I would suggest that proficiency in the use of both Kielland's and axis-traction forceps has much to commend it.

The Persistent Occipito-posterior

Where short rotation occurs and persistent occipito-posterior presentation results, this will often be diagnosed from the fact that the head fails to advance despite the strong expulsive contractions. In such cases the vulva frequently gapes, but the head, instead of coming on to the perineum as one might anticipate, remains well back in the pelvis. As soon as a diagnosis of persistent occipito-posterior presentation is made, delivery should be carried out by forceps, and in certain circumstances it is quite permissible, and indeed advisable, to deliver it as a face-to-pubis. I would suggest that the criteria for delivery as a face-to-pubis would be that the diagnosis has been late and gross moulding has occurred in the persistent occipito-posterior position, or that there is contraction of what has been called the ischio-pubic segment of the pelvis. This is, of course, the funnel-shaped or android pelvis of to-day. There is much more room for the biparietal diameter in the ilio-sacral segment, and delivery can be effected with less traction and trauma to the child with the head in the posterior position provided that an ample episiotomy is carried out.

An interesting comment upon this type of delivery is that on occasion an occipito-anterior or an occipito-lateral presentation may undergo rotation backwards into the hollow of the sacrum, where the outlet is slightly contracted. This was adequately described by Herman many years ago, and has been referred to again by Cameron and Hewitt amongst others. None the less, while it is permissible to deliver the baby face-to-pubis in the circumstances outlined, as a rule manual rotation of the head to an anterior position gives most satisfactory results, particularly in multiparous patients.

Delivery of the Occipito-posterior in a Multiparous Patient

In the multiparous patient a complication of the occipito-posterior position is occasionally encountered to which inadequate attention has been paid. Where the uterine contractions have been of poor quality the multipara may reach full dilatation with the head remaining high in the pelvic cavity. In such cases it may be necessary to attempt delivery on account of foetal distress or for some other reason. Where the degree of flexion of the head is poor, great difficulty may be encountered quite unexpectedly in that the head extends whenever traction is applied by forceps, with the result that the blades tend to slip; or, again, in such cases the head may suddenly recede in the course of rotation from the pelvic cavity and the assistant has difficulty in bringing it back into the pelvic brim. I have encountered prolapse of the cord in such cases, and even prolapse of a limb.

Where any such unanticipated complication arises there is much to be said for a manœuvre which for no very good reason has now fallen into desuetude. I refer to internal version. I have carried out internal version myself in nine cases—in two of my private patients and seven of my hospital cases—and have been able to secure a live child. Had the attempt at delivery with forceps been continued it would have resulted in undue trauma to mother and child. The conditions which must necessarily exist for internal version are a good anaesthetic with reasonable laxity of the uterus and some liquor amnii in the cavity. It should not need to be emphasized, however, that this is not a procedure to be indulged in by the obstetric tyro, but it

can be of great assistance and is not unduly difficult to anyone with some experience of difficult midwifery.

The Third Stage after Anaesthesia

Any discussion of the management of difficult vertex presentations would be incomplete without mention of the management of the third stage. Where labour has been protracted and delivery effected by forceps under anaesthesia, we should anticipate the probability of third-stage bleeding. The uterus is frequently atonic, partly from exhaustion and partly as a result of the anaesthetic. The practice of completing the delivery of the child and allowing the patient to recover from the anaesthetic before dealing with the placenta is, I am convinced, a bad one; for where this is done excessive loss in the third stage is all too common, and a later attempt either to express or to remove the placenta will cause shock, which the patient can ill withstand.

I now prefer to complete the third stage before allowing the patient to come out of the anaesthetic. My own practice is to inject ergometrine after the delivery of the child and, within minutes, to deliver the placenta. This may sometimes be spontaneous where the anaesthetic is light. Often it can be easily effected by a mere expulsion, but, where this does not occur, expression or even manual removal is definitely preferable to administering a second anaesthetic some time after delivery and before the patient has had time to recover fully from the shock of the first. The so-called hour-glass constriction of the uterus rarely occurs, and when it does it can be easily overcome.

As I mentioned at the beginning of this lecture, I make no claim to any originality in the procedures which I have outlined in the management of cases of difficult vertex presentation. Sometimes, in this period of rapid medical progress, there is a danger of the obvious becoming less obvious. It is therefore advantageous to review the principles upon which we base our practice. I have tried to apply to my own practice some of the scientific advances which have been placed at our disposal during the past twenty years, and by so doing have endeavoured to enhance the art which has been handed down to us by generations of teachers and to evolve therefrom a form of management of difficult vertex presentations. This form of management, on the whole, has been found to give good results.

Basic principles for the provision of health care for children of school age have been defined by a group of medical men, health educators, and nurses called together by the World Health Organization under the chairmanship of Dr. Fraser Brockington (U.K.). The committee emphasized the need for school health services to be organized co-operatively. They should be "team projects," involving parents, community, professional groups, social agencies, and others interested in the welfare of the child. They should, moreover, be a direct continuation of pre-school services and be so correlated that the benefit of information about the child accumulated during the pre-school period might be available in the school health programme. Healthy school buildings, with good ventilation and lighting, and adequate washing and sanitary facilities, should not only promote the child's health but also serve as an educational example to the community. The committee considered that preventive measures against communicable diseases in childhood should be organized by each school; and, "for the very reason that the school is the centre of educational stimulation in most communities, it has a unique rôle to play in the dissemination of knowledge about communicable diseases." The committee also recommended the establishment, wherever possible, of health education programmes with parents and community groups, adapted to the social, cultural, and economic environment in which the children are living.

TREATMENT OF SEVERE HYPERTENSION WITH HEXAMETHONIUM BROMIDE

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A number of drugs producing a fall in blood pressure have been investigated in an attempt to obtain a gradual but sustained fall in patients suffering from severe hypertension, as a support to the commonly employed measures of rest, sedation, limitation of salt intake, and diuretics. Treatment with thiocyanate has been reported on by Hines (1946) and Watkinson and Evans (1947), and this work has been reviewed favourably by Alstad (1948). More recently tetraethylammonium salts have been used by Lian and Bergamo (1948), Stead *et al.* (1948), and others. With these drugs it is possible to produce a marked fall in both the systolic and diastolic blood pressures, but protracted treatment is unsatisfactory in that it is limited by serious side-effects and by difficulties of administration.

Paton and Zaimis (1948) drew attention to the clinical potentiality of hexamethonium in hypertension, as they had found that, compared with tetraethylammonium, it gave a slower onset of action combined with a greater potency and longer duration of effect. They have recorded a detailed study of the ganglionic blocking action of hexamethonium and pentamethonium (Paton and Zaimis, 1949), the former being the more active. The clinical effect of these compounds upon the blood pressure was subsequently examined by Arnold and Rosenheim (1949), Burt and Graham (1950), and Kay and Smith (1950).

From this work it was evident that these drugs were capable of producing a marked and protracted reduction of the systolic and diastolic pressures, and they were therefore used in the treatment of patients suffering from severe hypertension. Eight cases of hypertension with papilloedema were selected for this trial and were treated with hexamethonium bromide.

Dosage and Method of Administration

A dose of 100 mg. administered intramuscularly every four hours was found to produce a progressive reduction in the blood pressure in all cases.

Subsequently, oral treatment was determined to be satisfactory, and indeed it produced a more constant fall of the blood pressure without the fluctuations encountered when the parenteral route was used. The drug was administered in solution formed by dissolving tablets—0.5 g. in 20 ml. of water. On the first day of treatment 0.25 g. should be given twice, followed by 0.25 g. thrice daily for the next two days, then 0.5 g. thrice daily for two days, the dosage being progressively increased until by the tenth day 0.5 g. is being given four to six times a day—a daily total of 2 to 3 g. It was found that the drug is more effective when given before meals.

Case 1

A woman aged 21 was seen in December, 1949, with dimness of vision and increasingly frequent headaches of over two months' duration. She was then in the third month of her first pregnancy. She had hypertension but no albuminuria, and there was no history of renal disease. Despite the termination of her pregnancy on February 2, 1950, the hypertension increased and albuminuria developed. She was pale, her blood

pressure was 220/140, there was no evidence of arteriosclerosis, and the femoral pulses were easily felt. The heart was not enlarged and radiologically was normal in contour. The electrocardiogram was normal. Her vision was 6/36 both eyes; the fundi showed marked papilloedema of both disks, numerous soft exudates, and linear haemorrhages, with classical macular stars. There was fullness of the veins, with nipping at the A.V. crossings, and an A.V. ratio of 1:3.

Urine examination showed an albuminuria of three parts Esbach, occasional red cells, hyaline and granular casts, no pus cells or organisms. The specific gravity was fixed at 1004, with maximum urea concentration of 1.1%. The night volume exceeded the day volume. The blood urea was 115 mg. per 100 ml. A straight radiograph of the urinary tract revealed normal renal outlines, and no calculi were seen; the intravenous pyelogram showed no function up to 22 minutes. The sodium amytal test gave a maximum fall at the fifth hour, the systolic pressure dropping from 230 to 180, and the diastolic from 140 to 115 mm. of mercury.

The patient's progress with rest in bed, sedation, and a salt-free diet, which had been instituted on admission, was disappointing. Over a period of 10 weeks the vision did not improve, the physical findings were unaltered, and the lowest blood pressure recorded was 180/115 mm.

It was decided to use hexamethonium bromide orally. A small dosage was given initially, and within a few days was raised to a total of 3 g. daily, divided into six doses. Her blood pressure fell gradually during the next three weeks and settled to a systolic pressure between 120 and 140 and a diastolic of 80 to 95 mm. The blood urea fell to 70 mg. per 100 ml. Renal function tests showed a maximum concentration of 1018 and a maximum dilution of 1004. Albuminuria remained at two parts Esbach. Vision improved to 6/6 in both eyes; papilloedema disappeared; and fundal haemorrhages and exudates showed absorption and organization.

The patient was allowed up from May 21 and complained of some faintness due to postural hypotension for the first three days. On June 5 hexamethonium bromide was withdrawn, after seven weeks' treatment with it. There was no rise in her blood pressure, which after two months without treatment still varied between 130/95 and 120/75 mm. She was free of all symptoms, and has undertaken work as a nursing orderly in the wards for eight hours a day.

Case 2

This patient, a woman aged 46, was admitted on April 19, 1950, complaining of increasingly severe headaches of four years' duration, with recent transient paraesthesiae in one or more limbs, associated with severe paroxysms of occipital and frontal headaches, and followed by a transient loss of muscle power. She had had four normal pregnancies, the last nine years previously, at which time no hypertension was present. There was no history of renal disease.

On admission her blood pressure was 230/120 mm. The heart was not enlarged clinically, slight radial arteriosclerosis was noted, and the femoral pulses were present. Well-marked papilloedema was seen; the A.V. ratio was 1:2; slight exudates were present, but no haemorrhages. No albuminuria was found; the maximum concentration was 1025, and the minimum dilution of the specific gravity was 1005. Radiological examination of the urinary tract and chest revealed no abnormality. The sodium amytal test gave a maximum fall at the sixth hour—the systolic from 230 to 160 and the diastolic from 130 to 90 mm.

Absolute rest, sedation, a salt-poor low-calorie diet, and xanthine diuretics for three weeks produced no improvement in her condition or fall in blood pressure. On two occasions transitory arm and leg pareses occurred.

Oral treatment with hexamethonium was begun, the dosage being raised to 3 g. daily. Complete relief from all symptoms occurred within six days, her blood pressure falling to between 130/75 and 150/100 mm. She was allowed up, and during the next fortnight complained only of faintness due to postural hypotension. Fundal examination showed disappearance of papilloedema. The blood urea was 20 mg. per 100 ml., and there was no change in renal function. After a further month she was discharged, and attends as an out-patient, receiving a maintenance dosage of hexamethonium.

Case 3

A man aged 39 was admitted on April 20 with retrosternal discomfort and pain radiating down the left arm, occurring at rest and aggravated by effort. He complained also of palpitation and dyspnoea, and suffered from severe headaches. His vision had been failing for the past two months. There was a history of acute nephritis at the age of 20. The blood pressure was 240/120, the heart was slightly enlarged, and there was left ventricular preponderance in the electrocardiogram. Triple rhythm was present. The blood urea was 35 mg. per 100 ml. The maximum renal concentration was 1015 and the maximum dilution 1002. The fall obtained in the sodium amytal test was 240 to 190 systolic and only 140 to 130 diastolic.

After 14 days in bed on a salt-poor low-calorie diet and phenobarbitone, 1 gr. (65 mg.) three times a day, the patient complained of deterioration of vision; increasing papilloedema was observed in addition to numerous linear haemorrhages and exudates.

Hexamethonium bromide was given orally—a total of 3 g. daily. His vision improved, the headache, retrosternal discomfort, pain, and dyspnoea disappeared, and he was allowed up on May 31, his pressure varying between 115/75 and 145/95 with occasional transient variations above these limits. The blood urea was 30 mg. per 100 ml., and the renal function tests were unaltered. After a further month in hospital he was discharged on maintenance dosage. He felt well and was symptom-free.

Case 4

A woman aged 50 was admitted with essential hypertension of 10 years' duration. Cardiac enlargement, moderate arteriosclerosis, and papilloedema were present. Her blood pressure was 230/140 mm.

No improvement was noted during four months of hospital treatment, and on June 14 hexamethonium was given orally, 3 g. daily. In 10 days the blood pressure fell to 160/100 mm. and remained fairly constant. The patient became ambulant and all symptoms were completely relieved.

Case 5

This patient, a man aged 56, developed severe hypertensive heart failure and was admitted on April 24, when cardiac asthma was found to be a prominent feature. There was no history of renal disease. During the next fortnight his blood pressure was constantly 260/155. The heart was clinically enlarged, and radiological examination showed an increase of the transverse diameter of the heart and pulmonary congestion indicating left heart failure. Medium crepitations were present at both bases. Papilloedema was observed. Preliminary treatment without hexamethonium had no effect and the prognosis was grave.

Hexamethonium was given in total dosage of 2.5 g. a day from May 11. From being orthopnoeic the patient became symptom-free and ambulant in 35 days. His blood pressure varied between 140 and 150 systolic and 80 and 110 diastolic. There was no clinical evidence of cardiac enlargement. Radiological examination revealed a transverse diameter of the heart which was within normal limits. A month later he became capable of light exercise without dyspnoea, and he has been discharged on maintenance dosage.

Case 6

A woman aged 49 had been treated in bed for the previous 10 months at home with no relief of her symptoms of dyspnoea on effort and at rest, anginal pain, severe headaches, and failing vision. Her blood pressure on admission was 240/160 mm. There was gross cardiac enlargement, left ventricular preponderance, and triple rhythm. Marked papilloedema and numerous exudates and haemorrhages were seen. She was admitted on

June 14 and treated from the 25th with hexamethonium bromide, 2.5 g. total a day. Her blood pressure fell in 10 days to 170/110 mm. and there had already been relief of dyspnoea, anginal pain, and headache; after a further three weeks she was allowed up, and improvement has been maintained.

Case 7

This patient, a woman aged 41, was admitted on February 15, 1950, with a history of cardiac asthma, severe headaches, and dyspnoea on effort of two years' duration. She had had acute nephritis at the age of 20. Gross heart enlargement was present and triple rhythm. There was early papilloedema with exudates and haemorrhages. Her blood pressure during the next three months in hospital with routine medical treatment was at a constant level of 275/170 mm.

Hexamethonium treatment was begun on June 14 and raised to a total daily dosage of 3 g. Her blood pressure fell to 180/120 mm., and remained at this level. The headaches and dyspnoea disappeared, papilloedema regressed, and the patient could sleep recumbent. After four weeks' treatment hexamethonium was withdrawn. There was no subsequent rise of her blood pressure. She is ambulant and well.

Case 8

A man aged 30 was admitted on April 5 with malignant hypertension, and his blood pressure was found to be 195/130 mm. The symptoms were of four weeks' duration, and during the next two weeks of observation a rapid deterioration in his condition took place, headache, nausea, and vomiting being associated with gross fundal changes and visual failure. There was an albuminuria of four parts Esbach with numerous red cells microscopically and a blood urea of 100 mg. per 100 ml. The intravenous pyelogram showed no function in either kidney after 25 minutes.

Hexamethonium treatment was begun on April 17 in a dosage of 3 g. a day, which produced a steady fall of blood pressure to 130/80 mm. Complete relief of headache followed. The fundal changes regressed, with some improvement in vision. There has been no change in his renal function, and albuminuria averages two parts Esbach.

Hexamethonium was withdrawn on July 9. There was no alteration in the blood pressure for the next month, but a subsequent rise of blood pressure to 170/110 mm. necessitated a further course of treatment with hexamethonium, which has reduced the pressure again to within normal limits, and his blood urea has fallen to 30 mg. per 100 ml.

Discussion

Throughout this series the substitution of normal therapeutic measures other than rest in bed by oral medication with hexamethonium bromide led to an immediate fall in the blood pressure to a level which could readily be maintained by a daily total dosage of 2 to 3 g.

The most striking results were obtained in Cases 1 and 8, young patients with no previous history of renal disease, with symptoms of short duration and rapid progression, and with no arteriosclerosis. Although there was a remote possibility of a remission in Case 1, there can be no doubt about the efficacy of the intervention of hexamethonium in Case 8.

In the presence of long-standing hypertension without a previous history of renal disease, the blood pressure could be reduced to within normal limits or to such levels as were considered desirable clinically. Thus in Cases 5, 6, and 7 gross arteriosclerotic changes were present and reduction of the blood pressure to normal limits was considered inadvisable.

Headache has been abolished, papilloedema has markedly regressed, and vision has improved in every case. All the patients are now ambulant.

Complete relief from paroxysmal nocturnal dyspnoea was observed in Cases 5, 6, and 7, and from angina in Case 3, contrary to the experience of Bjorkenheim (1948) with tetraethylammonium. Clinical and radiological evidence of the return of an enlarged heart to normal size was obtained in Case 5.

Alteration of the balance of fluid intake and output was negligible during treatment, and the volume of urine was slightly increased at first in some patients. It was possible to lower the blood pressure sufficiently to relieve symptoms in patients with chronic nephritis without disturbing renal function.

Hexamethonium was withdrawn in Cases 1, 7, and 8 without an immediate rise in the blood pressure; and, although Case 8 required further treatment, Case 1 still had a stable normal level of pressure after eight weeks. It seems likely that continuous administration may be unnecessary.

During the earlier part of this trial, shortages of hexamethonium led to substitution by pentamethonium bromide and iodide. This drug was found to be less effective in equal dosage, and nausea and tachycardia were troublesome. Hexamethonium is considered preferable.

Side-effects.—Blurring of vision, dry mouth, nausea and heartburn, and constipation were encountered in every case from the beginning of treatment. These side-effects were not severe and disappeared during the first two weeks, but recurred and disappeared with any significant increase in dosage. However, apparent paralytic ileus was encountered in two patients, necessitating withdrawal of hexamethonium for a period of 24 hours and treatment by the administration of a high enema, full dosage being subsequently resumed without complication. It was found necessary to begin treatment with a small dose of the drug, as the administration of a full dose initially produced a circulatory collapse in two patients. Faintness due to postural hypotension was complained of when patients became ambulant, but was of only a few days' duration.

Summary

Eight cases of severe hypertension have been treated with hexamethonium bromide, with a marked lowering of the blood pressure and relief of symptoms. Although experience with this series of patients is limited and the place of hexamethonium in the treatment of hypertension has still to be defined, this preliminary report is recorded because hexamethonium seems to provide a useful method of reducing the blood pressure in severe hypertension, with ready administration and relative freedom from toxicity.

We wish to express our thanks to Dr. J. Gibson Graham and Dr. A. E. Struthers for their encouragement, and to Dr. Thomas Parker for his permission to record these results. We thank Drs. R. Erskine, I. Muir, and N. Murray, house-physicians, for their kind assistance. We are indebted to May and Baker Ltd. for providing the supplies and information which enabled this trial to be undertaken.

References

Alstad, K. S. (1948). *British Medical Journal*, **1**, 250.
Arnold, P., and Rosenheim, M. L. (1949). *Lancet*, **2**, 321.
Bjorkenheim, G. (1948). *Finska Ink. Hand.*, **91**, 153.
Burt, C. C., and Graham, A. J. P. (1950). *British Medical Journal*. **1**, 455.
Hines, E. A. (1946). *N. Amer. Clin.*, **30**, 869.
Kay, A. W., and Smith, A. N. (1950). *British Medical Journal*, **1**. 460.
Lian, C., and Bergamo, G. (1948). *Sem. Hôp. Paris*, **24**, 547, 2237.
Paton, W. D. M., and Zaimis, E. J. (1948). *Nature*, **162**, 810
—— —— (1949). *Brit. J. Pharmacol.*, **4**, 381.
Stead, W. W., Reiser, M. F., Rapoport, S., and Ferris, E. R. (1948). *J. clin. Invest.*, **27**, 766.
Watkinson, G., and Evans, G. (1947). *British Medical Journal*, **1**. 595.

EFFECT OF ORAL HEXAMETHONIUM SALTS ON GASTRIC SECRETION

BY

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Hexamethylene-*bis*trimethyl-ammonium (hexamethonium) iodide (C6) has been shown by Paton and Zaimis (1949) to exert a blocking effect at the synapses of autonomic ganglia. In a previous paper (Kay and Smith, 1950) we have shown that this compound, when given intramuscularly, inhibits the gastric secretion and motility. In the present paper we give the results obtained with the same drug administered by mouth, and also compare the effects of the other halides.

In the first series of experiments we have observed the effect of a single dose of the iodide salt on the gastric secretion; in the second, the effect of repeated administration; and in the third, the comparative effects of equivalent doses of the iodide, bromide, and chloride.

Effect on Spontaneous Gastric Secretion

Ten male patients with duodenal ulceration were selected for study. Cases of peptic ulcer complicated by organic stenosis were excluded, since it was felt that the use of hexamethonium iodide would exaggerate gastric retention. Secretion tests were begun at 9 a.m., after a 12-hour fasting period. In the control test, specimens were aspirated every 30 minutes for a period of three hours. On the following day 500 mg. of the drug was given by stomach tube immediately on removal of the fasting juice. After one hour specimens were aspirated at 30-minute intervals. This method was used for six patients. In the other four, to avoid aspiration of unabsorbed drug retained in the stomach, the first aspiration was delayed until two hours after giving the drug.

At each aspiration the stomach was emptied, and the volume, bile staining, and titratable free hydrochloric acid were noted. All saliva was expectorated. It will be seen from Figs. 1 and 2 that achlorhydria was reached in five patients, being of short duration in three and lasting four hours in the other two. Of the remainder, three patients showed an appreciable fall in the level of acidity. Two, however, showed no significant change. That the reduction of acidity was due to diminished secretion and not to regurgitation of duodenal juice was indicated by the small volume of the fluid withdrawn and the absence of bile.

Effect of a Repeated Dose on Spontaneous Gastric Secretion

In view of the variable results noted above, it seemed desirable to determine if consistent results were obtained in individual patients. With this in view 500 mg. of hexamethonium iodide was administered to four patients on two successive occasions and the results compared with preliminary and final controls. As in the first group, the drug was given after aspiration of the fasting juice. Beginning one hour later, specimens were removed at half-hourly intervals. The results are shown in Fig. 3. It will be

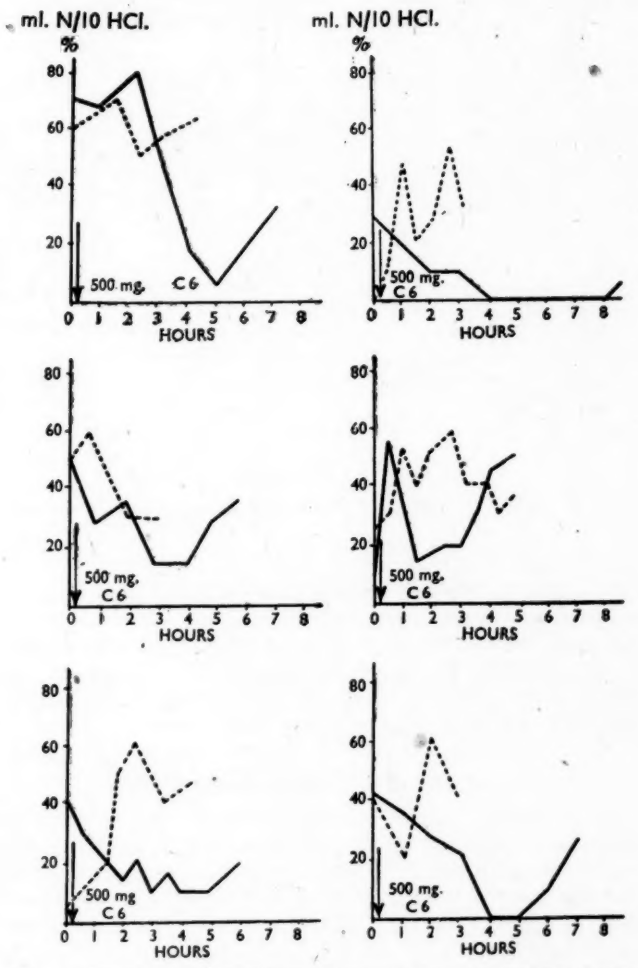

FIG. 1.—Spontaneous gastric secretion. Effect of oral C6, dosage 500 mg. (six cases). Broken line shows control readings.

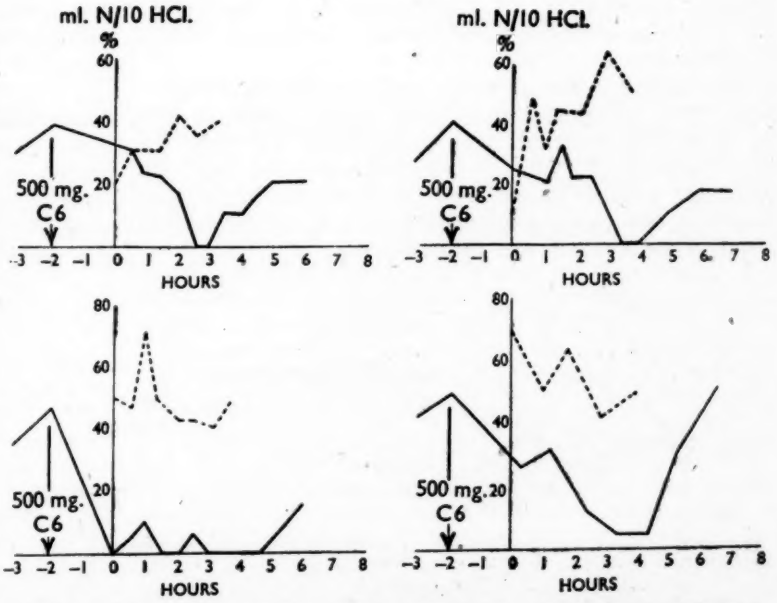

FIG. 2.—Spontaneous gastric secretion. Effect of oral C6, dosage 500 mg. (four cases).

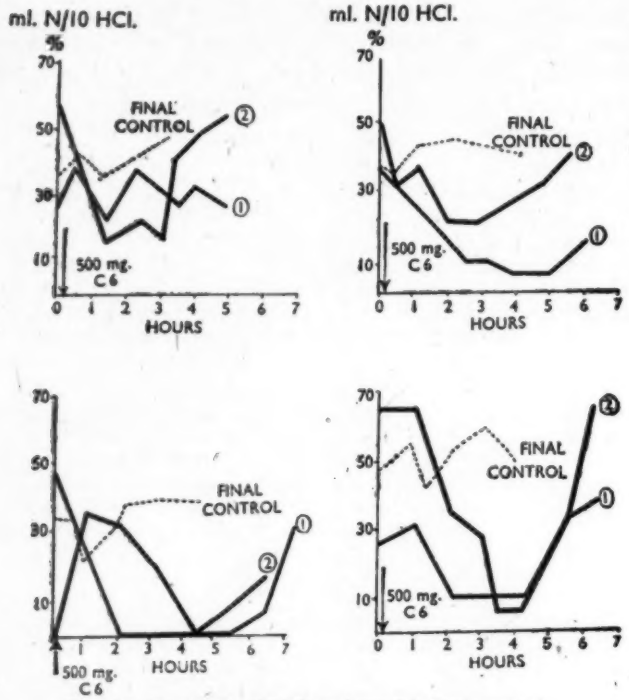

FIG. 3.—Repeated administration with final control.

seen that, while the effects differed in the four individuals, in each of them the successive results were consistent. It will be noted also that there was no evidence of prolonged action of the drug from one day to the next.

Comparison of Hexamethonium Halides

In a further series of six patients the action of equivalent amounts of hexamethonium iodide (500 mg.), hexamethonium bromide (440 mg.), and hexamethonium chloride (340 mg.) was tested on spontaneous gastric secretion. Control tests were performed before and after the test experiments. To avoid fallacies due to possible summation effects, the methonium salts were given in varying order, using all combinations. The tests were made on consecutive days, and in each case the fasting juice was removed, followed by a further specimen one hour later. The drug was then given and repeated aspiration delayed for two hours.

The average figures of the six cases are shown in Fig. 4, from which it will be seen that the iodide appears to give the most effective control of spontaneous secretion, the chloride being the least effective. Results obtained with individual patients agreed with the above finding in four cases; in one case the bromide gave a more satisfactory result, while another was inconclusive.

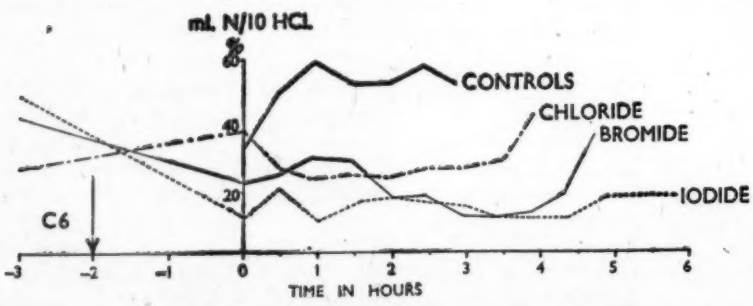

FIG 4.—Comparison of hexamethonium halides: oral administration. Average of six cases.

Observations on Side-effects.—During this investigation hexamethonium was administered on 36 occasions. Observations were made throughout on the frequency and severity of the known side-effects. After 12 of the administrations there was definite impairment of accommodation with resultant blurring of vision, though this was severe in only two cases. There was no visual upset in the remaining 24, but 8 patients complained of heaviness about the eyes; dryness of the mouth was mentioned by three patients; there was a tendency to constipation in several patients, especially in the group receiving hexamethonium on successive days. The sensation of warmth noted after intramuscular injections was not evident after oral administration.

Hypotension

It was found that with the patient supine there was an average drop of 5–10 mm. Hg in systolic and diastolic blood pressure. On standing motionless the fall in blood pressure was increased by 15 mm. Hg. This hypotension, elicited in the above manner, was present from one hour after administration, reached a maximum at two to two and a half hours, and lasted three to four hours. In these circumstances several patients complained of faintness, which was relieved by recumbency. It should be noted, however, that the subjects of this investigation had been fasting for more than 12 hours. It was noted that by taking active exercise faintness was prevented or overcome.

As an experiment under more rigorous conditions in which postural hypotension would be seen at the maximum, the action of hexamethonium was studied in four post-operative cases. They were males, aged 14, 21, 23, and 62 years, and were examined within one week of operation (ruptured appendix, perforated ulcer, inguinal hernia, and appendicitis). The patient aged 21 was ambulant for the first time. In this series particular note was taken of the effect on the blood pressure of standing motionless and of active movements.

Before giving hexamethonium, blood-pressure readings were obtained with the patient at rest in bed, immediately on standing, after standing motionless for five minutes, after walking for five minutes, and, finally, after recumbency for five minutes. Similar observations were made one, two, three, and four hours after 500 mg. of hexamethonium orally. On successive days the drug was given (*a*) after 12 hours' fast, the patient fasting throughout; (*b*) after 12 hours' fast, the administration being followed immediately by a meal; and (*c*) after a meal.

In control observations (without hexamethonium) immediately on standing there was a slight fall of blood pressure (5–10 mm. Hg), which was rapidly compensated by vasoconstriction. After hexamethonium, in two cases a similar fall of pressure occurred, but persisted while the patient remained motionless. In the third (Fig. 5) the fall was considerable (from 100/60 to 65/45). In the fourth there was a transitory severe hypotension with a feeling of faintness. In all cases the pressure rose towards the normal level when purposeful activity was begun. The findings in the man aged 62 are shown in Fig. 5.

When the drug was given on an empty stomach the blood-pressure changes were of the same order, whether the patient was subsequently given a meal or kept fasting, though in the latter state the subjective sensations were severe. When the drug was given after a meal, however, the hypotension on standing was slightly less. This

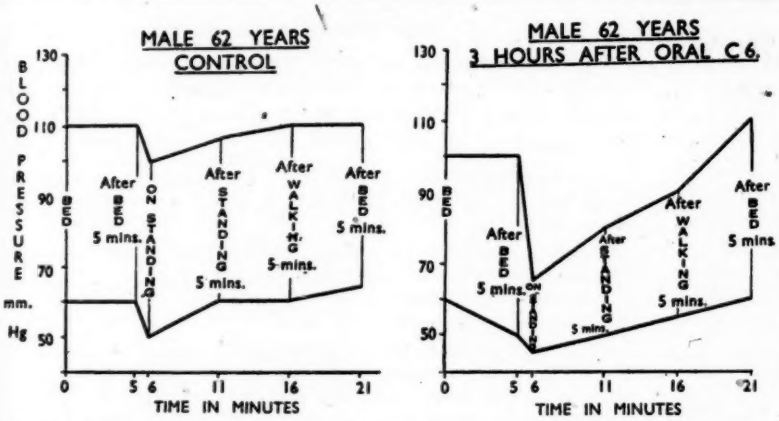

FIG. 5.—Effect of posture and activity on blood pressure before and after C6.

may have been due to delayed absorption, a point which requires further study.

Discussion

Our observations show that hexamethonium iodide given by mouth may depress the acid secretion, but does so less consistently than when administered intramuscularly. In about one-third of our cases the secretion was depressed to the point of achlorhydria, in one-third there was an appreciable lowering, while in the remainder there was no demonstrable effect. Since in this refractory group there were side-effects, including hypotension, the failure cannot be attributed entirely to faulty absorption. The observation that in four cases consecutive experiments gave closely similar results suggests that the failures may be due to individual variations in susceptibility to the drug.

Experimental work has shown that hexamethonium appears to be more effective in blocking the cat's superior cervical ganglion when this ganglion is excited frequently and for a long period than when it is excited briefly and with less frequent stimuli (Paton ; personal communication). It seems possible, therefore, that hexamethonium may in some cases depress abnormal ganglionic activity before it interferes with normal function. Thus the gastric effects would be most marked in cases with excessive vagal tone. Indeed, we gained the impression that side-effects such as hypotension were least marked in these cases in which acid secretion was most affected. Thus the drug may act at different sites in different individuals, according to the nature of the predominant autonomic tone.

The three halide salts of hexamethonium have been compared as regards their action on spontaneous gastric secretion. In this small series we gained the impression that the iodide and bromide gave better control of secretion than the chloride. This slight difference in potency may depend on a variation in the absorption of these compounds, though further investigation will be required on this point.

The beneficial effects of parasympathetic blockade are partly offset by the undesirable side-effects resulting from blockade of the sympathetic ganglia, the most notable of which is postural hypotension. The normal drop in blood pressure which occurs on standing is rapidly compensated by vasoconstriction. After oral administration of hexamethonium this mechanism is more or less depressed and postural hypotension is therefore apt to occur, but this can be controlled by muscular activity or recumbency. A feeling of faintness is rare except when standing motionless. The possibility of these symptoms arising is greater in the fasting patients. In general, however, faintness has been an uncommon experience in our series, presumably because standing motionless for several minutes on end is a rare event in everyday life. It is possible that the small risk of faintness could be removed by the use of a long-acting sympathomimetic drug.

Summary

Hexamethonium iodide was given orally to 10 patients with duodenal ulcer—five were rendered achlorhydric, three had a substantial fall in gastric acidity, and in two there was no significant difference between control and test observations.

Comparable results were obtained for each individual when the drug was given on repeated occasions. The effect was not prolonged from one day to the next.

All hexamethonium halides were found to be active in controlling spontaneous gastric secretion. In a small series of cases the iodide and bromide were found to produce a greater fall in gastric acidity than the chloride.

Side-effects, notably postural hypotension, may be present during routine administration of the drug.

Rigorous conditions for an experiment with four patients produced marked hypotension reduced by activity and by the taking of food.

Throughout the investigation a variability of the action of the drug characteristic to the individual was noted.

We are indebted to Professor C. F. W. Illingworth for his advice and helpful criticism throughout this investigation. We wish to acknowledge the interest taken by Dr. W. D. M. Paton, of the National Institute for Medical Research, in this work, and to record our thanks to Dr. N. S. Conway for kind assistance. Our thanks are also due to Mr. Gabriel Donald and the technical staff of the Surgery Department, University of Glasgow, and to May and Baker Ltd. for supplies of hexamethonium salts.

REFERENCES

Kay, A. W., and Smith, A. N. (1950). *British Medical Journal*, **1**, 460.

Paton, W. D. M., and Zaimis, E. J. (1949). *Brit. J. Pharmacol.*, **4**, 381.

On September 9 President Truman signed a Bill making lawful the call-up of all United States doctors, dentists, and "allied specialists" (including pharmacists, veterinary surgeons, and osteopaths), who are less than 50 years old, for a period of thirty-two months' military service. At the same time the Defence Department has issued a statement to explain in what order doctors will be called. It is intended that the first group will be those who received all or part of their professional training under wartime special training schemes but who had no military service owing to the ending of the 1939–45 war before they qualified. Next come those trained under these schemes but having military experience, those with least service being called first. Finally, all medical officers on the Reserve will be recalled in an order of priority, men trained at Government expense first, those with less than ninety days' active service, then those with less than twenty-one months, then those who had never previously served ; and finally doctors who trained at their own expense and have a military record. The officers' Reserve is voluntary, and every medical volunteer gets a pay bonus of $100 (£35) per month, to which the conscript will not be entitled. It is hoped that this, taken with the new call-up, will encourage volunteering to such an extent that it will in fact be unnecessary to apply conscription. The American Services say they need an additional 5,000 doctors and 2,000 dentists this year, and, if all the men trained at least partly with Government aid during World War II but who saw no service can be induced to volunteer, this need will be met. If conscription should prove necessary, it will be administered with the help of a national medical committee which will consider civilian needs in each district ; and interns in civilian hospitals will be reserved for a period of twelve months.

CLINICAL ASSESSMENT OF RAPIDLY ACTING AGENTS IN RHEUMATOID ARTHRITIS

BY

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The discovery by Hench, Kendall, Slocumb, and Polley (1949) of the therapeutic effects of cortisone in rheumatoid arthritis has stimulated the trial of many other steroids whose action might possibly be similar. Unfortunately the lack of cortisone in this country, with which such substances could be directly compared, has led to considerable difficulty in the interpretation of results. That many therapeutic trials have been carried out using unsatisfactory experimental methods has been strikingly illustrated by the recent controversy over the efficacy or otherwise of deoxycortone and ascorbic acid in rheumatoid arthritis. Some workers (Lewin and Wassén, 1949; LeVay and Loxton, 1950; and others) claim categorically that very remarkable results were being obtained; others (Kellgren, 1949; Spies *et al.*, 1949; Kersley *et al.*, 1950; Fletcher *et al.*, 1950; Copeman *et al.*, 1950) declare equally definitely that their results were negative. Similar claims, though less dramatic, are being made for other steroids lacking an oxygen atom at the 11 position—for example, "pregnenolone" (Davison *et al.*, 1950; Freeman *et al.*, 1950)—but, again, others have failed to confirm these results (Henderson *et al.*, 1950, who quote much unpublished work).

Clinical improvement has been the basis of most claims of therapeutic success. It is necessary, however, to support these claims by the demonstration that such improvement is real, and that it is due in fact to the particular substance administered. Quite apart from normal fluctuations occurring as part of the natural history of rheumatoid arthritis, the psychological effect of giving a new treatment may be considerable, especially as the dramatic effects of cortisone have become widely known. That such effects may be pronounced has been emphasized by Wolf (1950) in a paper entitled "The Effects of Suggestion and Conditioning on the Action of Chemical Agents—the Pharmacology of Placebos."

Our aim has been to adopt methods of assessment of clinical improvement, with special reference to rheumatoid arthritis, which will show conclusively whether or not an apparently beneficial effect is due to the trial substance. A detailed description of the methods used is given. These have been applied to deoxycortone and ascorbic acid therapy as described by Lewin and Wassén (1949), since their claims were both dramatic and precise: improvement was said to occur within minutes of a single combined injection, and this therefore presented the problem of assessment in the simplest possible terms. It is, however, suggested that these methods might be capable of development and modification for other substances which may become available from time to time.

Experimental Methods

The method used involved the clinical assessment of patients suffering from rheumatoid arthritis before and after injection: it was designed to include the following precautions:

Adequate Numbers.—A sufficiently large number was treated to enable a satisfactory statistical analysis to be carried out where necessary.

Placebo Control.—All patients received both test substance and control injection on separate occasions. They were unaware that placebo injections were being used, and the order of injection was statistically randomized.

Observer Control.—The observer was unaware of the nature of the injection given when carrying out the assessment, nor did he have available any record of previous results.

In addition, care was taken to avoid psychological pressure in that patients were told they were not receiving cortisone or A.C.T.H., and that this was simply a scientific investigation into a substance whose effects were not known. It was made absolutely clear that this was an investigation in which they were being asked to co-operate and that it was not part of their treatment.

Since the full assessment of a case of rheumatoid arthritis is a long and tedious business it was necessary to select certain features which would reasonably be expected to be affected if an active agent were used. Such features were both subjective and objective. The subjective phenomena considered were pain and stiffness. Objective measurements were made of joint tenderness, muscle power as measured by the power of grip, range of movement as illustrated by the range of abduction of the shoulder-joint, and the speed of movement by the time taken to walk a distance of 8 yards (7.3 m.), including climbing some steps. While these are by no means complete—and experience will probably suggest other criteria—they cover most of the recognized features of the disability of rheumatoid arthritis.

Joint swelling as such was not measured. We have not established a satisfactory method of doing this, but it would seem reasonable to suppose that any significant reduction in swelling would be manifested by some change in the other features measured. Nor were pathological criteria included, since these have been the subject of careful investigation by others (Bywaters *et al.*, 1950; Dresner *et al.*, 1950), and, as has already been explained, the object was primarily to find out whether clinical improvement took place.

Details of Methods Used

Forty-three patients—33 female and 10 male—were selected for the trial at their routine visits for consultation or treatment. The diagnosis of rheumatoid arthritis was based on the presence of chronic progressive polyarthritis, largely symmetrical, tending to affect the peripheral joints early, with muscle-wasting, constitutional disturbance, and loss of weight, but with no evidence of any specific infective organism. The patients all fell into Stage 1, 2, or 3 of rheumatoid arthritis as defined by Steinbrocker *et al.* (1949). The age distribution, duration of symptoms, and sedimentation rate within three months of the trial are shown in Table I. It will be seen that no case with an E.S.R. below 15 mm. (Westergren) in the first hour was included. Radiographic changes characteristic of the disease were present in all 36 cases in which an *x*-ray examination had been carried out. The experimental nature of the treatment was made clear to all the patients, but few of those

TABLE I.—*Age Distribution, Duration of Symptoms, and E.S.R.*

Age		Duration of Symptoms		Sedimentation Rates (Westergren)	
Years	No. of Cases	Years	No. of Cases	Mm. in 1st Hour	No. of Cases
25– ..	3	1–	7	15–	9
35– ..	8	4–	9	25–	15
45– ..	14	7–	12	35–	6
55– ..	14	10–	6	45–	6
65 and over	4	13–	3	55–	5
		16 and over	6	65 and over	2
Total ..	43		43		43

asked refused to take part in the investigation. They were not told what drugs were being used or that control injections of an inert substance would also be given, but it was made clear that they were not receiving cortisone. They were asked not to take aspirin or other analgesics on the days of the injections.

Patients came up in groups of 10 to 12 to be tested and questioned individually by one of us. They were asked whether they had any pain and, if so, whether it was constant or only present on movement. They were also asked whether stiffness was present and, if so, which part of the body was chiefly affected.

In order to elicit joint tenderness, a swollen joint was squeezed between finger and thumb, maximal force being exerted. In the case of proximal interphalangeal joints, which were usually selected, pressure was applied to their lateral and medial aspects. The amount of joint tenderness was graded arbitrarily according to the patient's reaction to this procedure. If the patient said spontaneously or on questioning that the joint was tender, the amount of tenderness was graded as 1; if in addition he winced or grimaced, the grading was 2; if the reaction was more violent and accompanied by withdrawal of the hand, the grading was 3; if no tenderness could be elicited the grading was 0. This grading is rather similar to that used by Hench *et al.* (1950). They, however, describe some six grades of tenderness; our figures are therefore not comparable with theirs.

For testing grip a rolled sphygmomanometer cuff was used. The end of the cuff was sewn firmly to the roll so as to ensure a cylinder of constant size when inflated. The cuff was inflated until a pressure of 50 mm. Hg was registered on the sphygmomanometer. The diameter of the cylinder was then approximately 6 cm. The patient was told to put his elbow on the table with his forearm inclined to an angle of 45 degrees. The cuff was placed in his hand and he was told to squeeze it as hard as possible and maintain the pressure. The height of the mercury column could not be seen by the patient. The pressure which he was able to maintain for two or three seconds was then recorded, the grip being measured in the right and left hand alternately (Kellgren and Janus, 1950—personal communication). Three readings were taken from each hand, and subsequently the mean of these readings was calculated.

The patient was then asked to abduct his shoulder to the fullest possible extent. The arm was not allowed to move forwards, so that true abduction was carried out. The amount of abduction was recorded in degrees, and, though this is a visual estimate without instrumental aid, a considerable measure of accuracy can be obtained.

He was then asked to walk as quickly as possible from one end of the room to the other, some steps being placed in his path. The length of the room was 12 ft. 4 in. (3.76 m.) and the height of the steps 14 in. (35 cm.) (three steps were involved of 6 in. (15 cm.), 8 in. (20 cm.), and 6 in. with no hand rail). The time taken to complete the course was measured with a stopwatch.

After being tested the patient received in a separate room his injection from whichever observer was not doing the assessing on that particular group (22 patients were injected by C. E Q. and 21 by R. M. M.). Numbered envelopes had previously been prepared giving the order of injection, which was randomized. Each patient received a serial number, and the order in which his injections were to be given was determined by opening the corresponding envelope. The nature of the injection was thus concealed from the observer until the group he was assessing had completed the trial.

The technique of injection was as follows: 5 mg. of deoxycortone in 1 ml. of oil or 1 ml. of saline was injected into the muscles of the outer side of the thigh, followed in one or two minutes by 1 g. of ascorbic acid in 10 ml. of aqueous solution or 10 ml. of saline intravenously.

One hour after injection the patient was asked whether his pain was better, unchanged, or worse, and whether his stiffness was less, unchanged, or greater. When the patient reported improvement or deterioration, its extent was graded as "slight," "moderate," or "marked" according to the impression made by his statement. Any other effects from the injections were noted and the tests previously described were then repeated. The assessor was not allowed to see the results of any previous tests when making his assessment. Finally, one week later we noted any improvement or deterioration which had occurred and, in particular, whether the arthritis was better or worse than before the injection.

Results

Subjective Changes.—An analysis of the subjective impressions of the patients following injection is shown in Tables II, III, and IV. In Table II the overall improvement or deterioration, whether affecting pain or stiffness, is recorded. Pain and stiffness are considered separately in Tables III and IV, and the grading of the responses is shown. It is clear from these tables that there was subjective improvement in many patients, no less than 58% claiming this to be the case one hour after either

TABLE II.—*Overall Assessment (Subjective)*

Condition After Treatment Relative to Condition Before	No. of Cases			
	1 Hour After Injection		1 Week After Injection	
	Da/asc.	Saline	Da/asc.	Saline
Better	24	24	18	16
Unchanged	16	18	19	18
Worse	3	1	5	8
Total ..	43	43	42	42

One patient did not return for assessment after final injection and has been excluded from comparison one week after.
Da/asc. = deoxycortone and ascorbic acid.

TABLE III.—*Pain*

Pain 1 Hour After Treatment Relative to Pain Before		No. of Cases	
		Da/asc.	Saline
Better	Marked	1	1
	Moderate	12 } 18	11 } 17
	Slight	5	5
Unchanged		23	26
Worse		2	—
Total		43	43

Da/asc. = Deoxycortone and ascorbic acid.

TABLE IV.—*Stiffness*

Stiffness 1 Hour After Treatment Relative to Stiffness Before	No. of Cases	
	Da/asc.	Saline
Better { Marked	—	1
Better { Moderate	11	6
Better { Slight	8	12
Better { Total	19	19
Unchanged	23	22
Worse	1	2
Total	43	43

Da/asc. = Deoxycortone and ascorbic acid.

injection. It is also clear from the tables that the test substance was no more effective than saline in this respect. Only one patient showed marked subjective improvement, and this occurred after each injection. One hour after the first injection (deoxycortone and ascorbic acid) he said there was a dramatic relief of his pain and considerable diminution of stiffness. At the end of a week he said that some days he "had been better, some days worse," but, on the whole, slight improvement had occurred. He was then given his control injection of saline, and one hour later said that "almost immediately after the injection there was a glow and complete relief of pain—it was dramatic." The pain had "gone completely" from his hands, and this time a marked relief of stiffness had also occurred. A week later he said that his improvement had been maintained for four days and that he had then relapsed, although not quite to his pre-injection level.

Joint Tenderness.—The degree of joint tenderness of the selected joint at the first assessment was as follows: 4 cases showed grade 1 tenderness only, 26 cases grade 2, and 13 cases grade 3. The wrist-joint was used in 4 cases, a metacarpo-phalangeal joint in 1 case, and a proximal interphalangeal joint in 38 cases. As can be seen from Table V, the numbers of those improved after injection were relatively small and the difference between the effects

TABLE V.—*Joint Tenderness*

Tenderness 1 Hour After Treatment Relative to Tenderness Before	No. of Cases	
	Da/asc.	Saline
Better by 1 point on scale	8	7
Unchanged	34	32
Worse by 1 point on scale	1	4
Total	43	43

Joint tenderness was measured on a scale: 0 = no pain; 1 = slight pain; 2 = wincing; 3 = wincing and withdrawal.
Da/asc = Deoxycortone and ascorbic acid.

of deoxycortone/ascorbic acid and saline is negligible. No formal tests of significance are required to stress the similarity between the figures.

Grip Test.—The average power of grip in each hand before and after injection, measured in mm. Hg over and above the 50 mm. Hg to which the cuff was inflated, is shown in Table VI, together with the average increase

TABLE VI.—*Grip Test. Average of Three Readings (mm. Hg)*

	Right hand			Left hand		
	Before Injection	After Injection	Difference	Before Injection	After Injection	Difference
Da/asc.	50	55	+5	47	52	+5
Saline	51	55	+4	48	52	+4

Da/asc. = Deoxycortone and ascorbic acid.

in grip after injection. Table VII gives the frequency distribution of the range of improvement or deterioration Taking both hands together (86 hands, 43 patients), an increased grip was recorded in 65 after deoxycortone/ascorbic acid and in 56 after saline. It will be seen from Table VI that the difference in the average increase in grip after test substance as compared with control amounted to 5−4=1 mm. Hg in favour of the test substance for each hand. Such differences are of no practical significance even if they were technically so. Using a significance test, however, for right hands $t=0.433$, $P>0.6$, and for left hands $t=0.757$, $P>0.4$. Evidently in this experiment the effect of deoxycortone/ascorbic acid on the power of grip was not significantly different from that of saline.

TABLE VII.—*Grip Test*

Difference between Grip 1 Hour After Injection and Grip Before Injection (mm. Hg)	No. of Cases					
	Right Hand		Left Hand		Both Hands	
	Da/asc.	Saline	Da/asc.	Saline	Da/asc.	Saline
Better by more than 10	9	11	9	11	18	22
„ „ 5·1–10	10	9	13	5	23	14
„ „ 0·1–5·0	14	8	10	12	24	20
Worse by 0·0–4·9	5	8	8	8	13	16
„ 5·0–9·9	3	4	1	5	4	9
„ more than 9·9	2	3	2	2	4	5
Total	43	43	43	43	86	86

Da/asc. = Deoxycortone and ascorbic acid.

Shoulder Abduction.—Patients with a full range of abduction of the shoulders had to be excluded from the analysis of this test since the only change possible would have been a deterioration. Only 24 right shoulders and 26 left shoulders were therefore available in our cases. The average range of abduction of the shoulder-joint in these cases, measured in degrees, is shown in Table VIII.

TABLE VIII.—*Average Shoulder-joint Abduction in Degrees*

	Right Shoulder			Left Shoulder		
	Before Injection	After Injection	Difference	Before Injection	After Injection	Difference
Da/asc.	109	112	+3	100	106	+6
Saline	102	108	+6	100	105	+5

Da/asc = Deoxycortone and ascorbic acid.

The difference in response for right shoulders was 6−3=3 degrees in favour of saline, and for left shoulders 6−5=1 degree in favour of deoxycortone/ascorbic acid. As already described, these measurements were made without instrumental aid, and such changes are, of course, well within the experimental error of the method. In any case, such differences are of no practical importance and technically not significant (right $P>0.4$, left $P>0.8$). Table IX shows the frequency distribution of the range

TABLE IX.—*Shoulder Abduction*

Difference between Abduction 1 Hour After Injection and Abduction Before Injection (Degrees)	No. of Cases					
	Right Shoulder		Left Shoulder		Both Shoulders	
	Da/asc.	Saline	Da/asc.	Saline	Da/asc.	Saline
Improvement:						
20 and over	4	3	4	3	8	6
15	—	2	2	2	2	4
10	5	5	3	4	8	9
5	3	1	3	—	6	1
No change	7	10	10	13	17	23
Deterioration:						
5	—	1	—	1	—	2
10	2	1	—	3	2	4
15	—	—	2	—	2	—
20 and over	3	1	2	—	5	1
Total	24	24	26	26	50	50

Da/asc. = Deoxycortone and ascorbic acid.
Patients who had a maximum range (180 degrees) before injection of either Da/asc. or saline were excluded from this tabulation. Abduction was measured to the nearest 5 degrees, and the scale of differences therefore is discrete.

of improvement or deterioration, and it reveals that where improvements of 15 degrees or better are considered the figures for deoxycortone/ascorbic acid and saline, taking right and left shoulders together, are identical, in each case 10 shoulders showing this amount of improvement. Again, therefore, the test substance has been shown to be without benefit.

Step Test.—From Table X it can be seen that after deoxycortone/ascorbic acid 30 patients showed an improvement on their time, and after saline 29. One patient had

TABLE X.—*Step Test*

Difference Between Time 1 Hour After Injection and Time Before Injection (Seconds)	No. of Cases	
	Da/asc.	Saline
Better by more than 6·0	—	3
,, 4·1–6·0	4	4
,, 2·1–4·0	9	6
,, 0·1–2·0	17	16
Worse by 0·0–1·9	12	12
,, 2·0–3·9	—	—
,, 4·0–5·9	—	1
Total	42	42

Da/asc. = Deoxycortone and ascorbic acid.
One patient who was unable to complete the test before saline injection has been excluded from the comparison.

to be excluded as she could not satisfactorily complete the test before her first injection. The average improvement in the times taken following injection (Table XI) was

TABLE XI.—*Step Test*

	Average Time Taken in Seconds		
	Before Injection	After Injection	Difference
Da/asc.	14·7	13·4	−1·3
Saline	14·9	13·3	−1·6

Da/asc. = Deoxycortone and ascorbic acid.

1.3 seconds after test substance and 1.6 seconds after control injection, giving an advantage of 0.3 second to saline. This difference is again without practical or technical significance ($t=0.573$, $P>0.5$).

Discussion

As Bywaters *et al.* (1950) have pointed out, the presentation of statistically negative results such as we have shown in the objective tests described does not necessarily prove that the particular treatment is without effect, since the wrong criteria may have been chosen for measurement. However, in this investigation no difference could be detected in the subjective responses to deoxycortone/ascorbic acid as compared with saline: and, in fact, there is a marked similarity between the effects of control and test substances in this connexion.

It has already been shown by Kellgren (1949), Spies *et al.* (1949), and Bywaters *et al.* (1950) on small series of in-patients that deoxycortone/ascorbic acid therapy is without effect in rheumatoid arthritis, but the finding that no less than 58% of the 43 out-patients treated by us showed subjective improvement is of considerable interest. It emphasizes the fact that the strictest control methods are necessary to demonstrate that this is not in fact due to the test substance. It was possible to do this by proper randomization of the control injections, combined with the other precautions described, and it seems probable that these effects are simply due to the psychological effect on the patient of the administration of a new treatment. This may also explain the good results which have been claimed for this treatment.

Conclusions

This investigation indicates that the intramuscular injection of 5 mg. of deoxycortone followed immediately by the intravenous administration of 1 g. of ascorbic acid has no specific therapeutic effect on out-patients suffering from rheumatoid arthritis. This applies to subjective effects as well as the degree of joint tenderness, power of grip, range of shoulder abduction, and speed of walking. It also suggests that the injection of any substance of no therapeutic value whatever may produce a transient subjective improvement in approximately two-thirds of cases of rheumatoid arthritis.

Summary

Forty-three patients with active rheumatoid arthritis have been treated with deoxycortone and ascorbic acid, with saline controls.

Subjective improvement occurred to an equal extent after both test and control injections.

No significant difference could be detected when the results of objective tests with control injections were compared with those in which the test substance was used.

The methods of control and assessment used are described.

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REFERENCES

Bywaters, E. G. L., Dixon, A. St. J., and Wild, J. B. (1950). *Lancet*, **1**, 951.
Copeman, W. S. C., *et al.* (1950). *British Medical Journal*, **1**, 1006.
Davison, R., Koets, P., Snow, W. G., and Gabrielson, L. C. (1950). *Arch. intern. Med.*, **85**, 365.
Dresner, E., Pugh, L. G. C., and Wild, J. B. (1950). *Lancet*, **1**, 1149.
Fletcher, E., Lush, B., Buchan, J. F., and Wolff, S. (1950). Ibid., **1**, 94.
Freeman, M., Pincus, G., Johnson, C. W., Bachrach, S., McCabe, G. E., and MacGilpin, H. M. (1950). *J. Amer. med. Ass.*, **142**, 1124.
Hench, P. S., Kendall, E. C., Slocumb, C. H., and Polley, H. F. (1949). *Proc. Mayo Clin.*, **24**, 181.
—— —— —— —— (1950). *Arch. intern. Med.*, **85**, 545.
Henderson, E., Weinberg, M., and Wright, W. A. (1950). *J. clin. Endocrinol.*, **10**, 455.
Kellgren, J. H. (1949). *Lancet*, **2**, 1108.
Kersley, G. D., Mandel, L., and Jeffrey, M. R. (1950). *Lancet*, **1**, 703.
LeVay, D., and Loxton, G. E. (1950). Ibid., **1**, 209.
Lewin, E., and Wassén, E. (1949). Ibid., **2**, 993.
Spies, T. D., Stone, R. E., De Maeyer, E., and Niedermeier, W. (1949). Ibid., **2**, 1219.
Steinbrocker, O., Traeger, C. H., and Batterman, R. C. (1949). *J. Amer. med. Ass.*, **140**, 659.
Wolf, S. (1950). *J. clin. Invest.*, **29**, 100.

The report of the first session of the Joint I.L.O./W.H.O. Committee on the Hygiene of Seafarers has just been published as No. 20 in the Technical Report Series of the World Health Organization. The committee reviewed some of the main problems affecting the health of seafarers, including such subjects as medical examinations, medicine chests on board ship, accommodation and food supplies on board, hospital treatment on board and in foreign ports, rehabilitation, and social welfare. It was decided that W.H.O. should be asked to investigate the means whereby seamen might be medically examined with a view to preventing the employment of those suffering from active pulmonary tuberculosis. Suggestions were also invited for devising a practical procedure for the medical examination of all new entrants into the service and for ensuring regular periodical examinations thereafter. On the important subject of venereal disease the committee recommended that the attention of Governments be drawn to the importance of maritime nations adhering to the Brussels Agreement of 1924 as an interim measure until a broader instrument, in the form of international health regulations for venereal-disease control, may be established.

FIVE CASES OF PUERPERAL TETANUS (ONE ASSOCIATED WITH ECLAMPSIA)

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Tetanus is a rare complication of pregnancy, being more often seen during the puerperium. Schneider (1926) collected 109 cases from the literature, and Weinstein and Beacham (1941) reviewed 170 cases of post-abortal tetanus with a mortality of 84%. In tropical countries, especially India, China, and Africa, the condition is undoubtedly more common than these surveys of the literature would indicate.

Tetanus is said to follow abortion more frequently than it does labour at term. Infection often results from criminal interference or operative procedures, as in Case 1. In Cases 2 and 4 there was no such interference so far as could be ascertained, though native medicines are often introduced into the vagina. In Cases 3 and 5 a history of an unsterile procedure at home was elicited.

Clostridium tetani has been isolated from uterine lochia, but was not found in the two cases of the present series investigated bacteriologically. De Lee (1947) records that in Peiping approximately one-third of the population are carriers of the tetanus bacillus, but he does not specify whether this refers to the flora of the vagina or of the intestinal tract.

The incubation period of puerperal tetanus varies from four to twenty-one days (De Lee, 1947). The shorter the incubation period the worse the prognosis. According to Stander (1935) the first symptoms have been known to appear before the completion of labour. In Cases 1 and 4 the incubation period was eight days; in Cases 2 and 5 it was five days; and in Case 3 the first symptom was on the tenth day.

De Lee (1947) states that the incubation period for puerperal tetanus "is shorter than the incubation period in non-pregnant individuals." This is not borne out by the figures for the incubation period for non-puerperal tetanus given by most authors (Whitby, 1938; Brain, 1940; Price, 1946; Cecil, 1947; Harries and Mitman, 1947; Tidy, 1949).

Ibadan is the largest native city in Africa, with a population of over half a million. Living conditions are primitive and a knowledge of hygiene is almost completely lacking. Most of the inhabitants live in crumbling mud-brick houses. Tetanus is common, especially during the dry dusty season, and the portals of entry are often trivial—for example, tropical ulcers, infected "jigger" burrows (*Tunga penetrans*), the umbilical cord in the newborn (Jelliffe, 1950), etc. In India, Rogers (1944) emphasized the importance of dust-contaminated wounds as a cause of tetanus.

A labour managed according to native custom is favourable to the introduction of *Cl. tetani* into the birth canal, as the following brief description illustrates.

At the beginning of labour the patient is removed to the backyard or to a room in a mud house, the floor of which has been prepared by polishing with leaves. When the contractions assume a bearing-down character the patient is placed in a squatting or kneeling position, so that her buttocks are resting on the ground or on her heels and with the vulva touching or close to the ground. She remains in this position throughout the second and third stages of labour. If labour is delayed she may stay in this position for many hours or days, to the extent that lower-limb palsies are not uncommon.

The floor is very apt to be contaminated by goat faeces, which have been shown on many occasions to contain spores of *Cl. tetani*. In addition, Kerrin (1929) found that about 18% of a series of hen faeces examined by him contained *Cl. tetani*. In Ibadan, hens stray inside the houses as commonly as goats.

During the descent of the presenting part, a pad, which is usually a dirty cloth, is placed over the anus in order to protect the perineum, and on occasion native medicines are introduced into the vagina or smeared on the vulva, especially in cases of abnormal labour. After the completion of labour the vulva is cleaned with an unsterile decoction of herbs. This is repeated on the morning and evening of the next day. A torn perineum is similarly treated.

Case 1

An Ibo primipara aged 18 was admitted on March 20, 1950. She was at term and gave a history of having had two fits at about one and a half and two hours before admission. Labour had not begun. She had attended another antenatal clinic, and the pregnancy was reported to have been uneventful until March 16, when marked oedema was found, but she refused admission. Immediately before the first fit she had complained of frontal headache. While being admitted a third eclamptic fit occurred.

On examination the temperature was 99.8° F. (37.7° C.), pulse 88, respirations 22, and blood pressure 130/110 mm. Hg. There was marked oedema of the legs, abdominal wall, and face. Crepitations were heard at both lung bases. Abdominal examination revealed a tense uterus, reaching to the xiphisternum, suggesting hydramnios. Only one foetal heart was heard. Per rectum the cervical canal was felt to be taken up and the position of the head was high mid-cavity. Albumin was not found in a catheter specimen of urine. A modified Stroganoff method of treatment was instituted, using morphine, paraldehyde, and magnesium sulphate, together with a post-partum course of quinine sulphate as an antimalarial.

Eight fits followed in the next 12 hours, five of which were precipitated at short intervals by the onset of uterine contractions, necessitating further sedation and the administration of chloroform. Fifteen hours after admission the urine was found to be solid with albumin. The temperature was 102° F. (38.9° C.), pulse 124, and blood pressure 164/90 mm. Hg. The cervix became fully dilated some 19 hours after admission. After one and a half hours in the second stage, forceps were applied and a fresh stillbirth, weight 5 lb. 2 oz. (2.3 kg.), was delivered. A second foetus was found presenting by the head, but, as it failed to engage on rupturing the membranes, an internal version and breech extraction was performed. This was followed by manual removal of the placenta, which weighed 29 oz. (0.82 kg.) and macroscopically did not seem unduly infarcted. The baby, which weighed 5 lb. 4 oz. (2.4 kg.), has survived.

Next day the patient's temperature was 104.4° F. (40.2° C.), pulse 168, respirations 36, and blood pressure 124/94 mm. Hg. The urine was solid with albumin. Crepitations were not heard at the lung bases. Sedation was continued, together with penicillin, sulphathiazole, and quinine. Her general condition improved rapidly, but she had two further fits at an interval of five minutes, occurring 48 hours after the last fit and 40 hours after delivery. Thereafter the temperature and the pulse settled, the urine contained a trace of albumin, and the blood pressure fell to 108/60 mm. Hg.

The patient seemed to have made an uneventful recovery, when, on the eighth day after delivery at 2.30 a.m., she developed a severe pain in the back of the head and neck.

There were no definite signs. Morphine, ¼ gr. (16 mg.), was given. At 9 a.m. opisthotonos and considerable neck rigidity had developed. The muscles of the abdominal wall were board-like. Kernig's sign was markedly positive. Moderate trismus was present. She was fully conscious. Her temperature was 98.6° F. (37° C.) and the pulse 90. A lumbar puncture showed crystal-clear fluid under no increase of pressure.

Treatment was begun with antitetanus serum, 100,000 units intravenously, together with 100,000 units intramuscularly, sodium amytal, 0.5 g. intramuscularly at 9.30 a.m. and at 1 p.m., and procaine penicillin 1 ml. intramuscularly. At 1.30 p.m. she was much worse. Nuchal rigidity, opisthotonos, and trismus were marked. The body was held in hyperextension. There were no true generalized spasms, but repeated localized spasms of the jaw muscles made swallowing difficult and caused her to bite her tongue repeatedly. Morphine, ¼ gr., was given.

At 4.30 p.m. the patient was drowsy. Spasms were less frequent, her temperature was 99° F. (37.2° C.), and pulse 105. Sodium amytal, 0.5 g., was given intramuscularly. Following this, she slept through the night, and began having localized tetanic spasms only early the next morning.

At 8.30 a.m. on March 29 sodium amytal, 0.5 g., was given intramuscularly, as the patient had become restless and was having frequent generalized spasms. Trismus was very marked, and nasal feeding was started with a Ryle's tube. A vaginal examination showed the fundus uteri to be at the level of the umbilicus. The lochia were noted to be offensive and a high vaginal swab was taken, but *Cl. tetani* was not identified.

At 1 p.m. she had become comatose, although still in hyperextension. Sodium amytal, 0.25 g., was given at 9.30 a.m. and at 12 noon. The temperature had now risen to 104° F. (40° C.) with a pulse of 168. No new physical signs could be found. The lungs were clear. Procaine penicillin, 1 ml. intramuscularly, and quinine dihydrochloride, 10 gr. (0.65 g.) intramuscularly, were given. The temperature continued to rise during the night (107° F. (41.7° C.) at 2 a.m.) despite repeated tepid sponging. The patient did not recover consciousness, and died at 6 a.m. on March 30.

Impression.—A fulminating case of puerperal tetanus, with terminal hyperpyrexia, following eclampsia.

Case 2

A Yoruba woman of about 40 was admitted on January 12, 1950, at 1 a.m. She was a 4-para and gave a history of having aborted spontaneously 10 days before admission, after two months' amenorrhoea. On the fifth day after aborting she developed a stiff neck. Examination showed considerable neck rigidity, together with moderate trismus and rigidity of the muscles of the anterior abdominal wall. Kernig's sign was negative. There were no other abnormal physical signs. Her temperature was 99° F. (37.2° C.) and her pulse 120.

On admission she was given 200,000 units of antitetanus serum intravenously and morphine ¼ gr. This was followed by sodium amytal, 0.5 g. intramuscularly at 9 a.m. and 3 p.m., and phenobarbitone, 2 gr. (0.13 g.) three times a day. On January 13 the patient's condition was rather worse. Generalized spasms occurred if she was disturbed. Neck rigidity was more marked. At 2 p.m. her condition had deteriorated considerably. Generalized spasms were occurring every few minutes. Trismus was pronounced and the recti were board-like. A further injection of sodium amytal, 0.5 g., was given at 3 p.m. At 7.15 p.m. she became restless. The spasms recurred every two minutes or so, and she died at 7.50 p.m.

Impression.—A fulminating case of puerperal tetanus with a short incubation period.

Case 3

A Yoruba woman of about 30 was admitted on March 8, 1950, at 10.30 p.m. She was a primipara and gave a history of having had a normal full-time delivery at home 14 days previously. The delivery was conducted according to native custom with the patient kneeling throughout the later stages of labour. She stated that after expulsion of the placenta something protruded from the vagina (? cervix). Her attendants gave her a sitz bath containing native medicines, replaced the prolapsed tissue with a rag, and applied a dirty pad. Ten days after delivery the patient complained of difficulty in opening her mouth and of stiffness of the neck. Examination showed considerable nuchal rigidity, the neck being held in hyperextension, together with a moderate degree of trismus. The muscles of the abdominal wall were slightly rigid. Kernig's sign was negative. No generalized spasms were observed.

A purulent discharge was the only abnormality revealed by vaginal examination, the involution of the uterus being normal. Bacteriological examination did not show *Cl. tetani*. Her temperature was 99° F. (37.2° C.) and pulse 110. Her tongue was heavily furred and superficial ulceration was present around the edge. She was moderately well nourished, not anaemic, and showed no abnormality in either the respiratory or the cardiovascular system.

Treatment was begun with antitetanus serum, 200,000 units intravenously, sodium amytal, 0.5 g. intramuscularly at 11 a.m. and 5 p.m., and phenobarbitone, 3 gr. (0.2 g.) orally three times a day.

On March 9 the patient was having generalized spasms whenever she was disturbed, but was otherwise sleeping most of the time. Trismus was more marked, so that feeding was difficult. The temperature varied from 99.8° to 100.2° F. (37.7° to 37.9° C.). Sodium amytal, 0.5 g., was given intramuscularly at 5 a.m. and a course of crystalline penicillin was started (100,000 units intramuscularly twice daily). On March 10 generalized spasms were occurring more often, at about half-hourly intervals. On March 12 the fits were rather less frequent. The bowels had not been open since admission, so an enema was given. Fluids were taken fairly well. She was having phenobarbitone, 3 gr. by mouth three times a day.

On March 14 there was considerable improvement, although an occasional spasm of the face and neck occurred. The generalized spasms had stopped. She was able to swallow quite well. The vaginal discharge had also stopped. On March 17 there was considerable residual stiffness, the neck being still held in hyperextension, with rigid abdominal muscles. Absolute constipation persisted, enemas being required every third day. The mouth was clean and she was able to drink easily. Phenobarbitone was reduced to 2 gr. three times a day. On March 21 there had been no recurrence of the tetanic spasms, and the patient slept most of the time. Phenobarbitone was reduced to 1 gr. thrice daily, and on March 24 it was discontinued.

On March 30 there was no hyperextension of the neck, but residual nuchal stiffness was still present. She was able to walk if supported, but was very stiff-legged. Her back was still held in hyperextension and the abdominal muscles were very rigid. She could open her mouth three-quarters of the way and her bowels opened unaided. She insisted on taking her own discharge.

Impression.—A case of puerperal tetanus of moderate severity, responding rapidly to treatment.

Case 4

An Ibo woman aged about 27 was admitted on June 6, 1950, 10 days after the birth of her first child—a normal male infant. She had conducted her own confinement in her house. Labour had been uncomplicated and had lasted only five hours. No native medicines had been administered. Clean rags had been used as a vaginal pad. The patient gave a two-day history of difficulty in opening the mouth and of stiffness of the neck. No vaginal discharge had been noticed.

On examination definite trismus, neck retraction, and cervical stiffness were found. There was no abdominal rigidity or stiffness of the back. Her temperature was 99.5° F. (37.5° C.) and her pulse 100. Vaginal examination revealed no abnormality, the uterus being at the normal stage of involution. Treatment was begun with antitetanus serum, 200,000 units intravenously, sodium amytal, 0.5 g. intramuscularly, phenobarbitone, 2 gr. (0.13 g.) orally three times a day, and a course of crystalline penicillin (100,000 units intramuscularly twice daily).

On June 7 the trismus and neck rigidity had become much more pronounced, though she was still able to swallow. Stiffness of the muscles of the back and the abdomen had developed. There were no generalized tetanic spasms. Treatment was continued with phenobarbitone, 2 gr. four-hourly, and crystalline penicillin, 100,000 units intramuscularly twice daily. During the following week no real change occurred in the patient's condition. She was able to swallow and continued to feed the baby. On June 16 she had improved considerably, the stiffness of the cervical, abdominal, and back muscles having become much less. Phenobarbitone was reduced to 2 gr. three times a day and the penicillin was discontinued.

On June 18 she was able to walk about unaided, though she still had a minimal degree of trismus, neck rigidity, and stiffness of the musculature of the back. She was discharged at her own request.

Impression.—A mild case of puerperal tetanus responding rapidly to treatment.

Case 5

A Yoruba woman aged about 25 was admitted to hospital on June 17, 1950. She was a primipara, having given birth to a normal male child 10 days before admission. The early stages of labour had been easy, lasting only a few hours. Expulsion of the placenta, however, had been incomplete. The patient had then been made to blow into a calabash horn in an attempt to force out the retained portion of placenta. This had been unsuccessful. Attendant relatives had then tried to assist by swabbing out the vagina with plugs of fresh kapok. The woman was not certain whether the remainder of the placenta had been eventually removed or not. No native medicines had been administered during labour. Dirty rags had been used as a vaginal pad.

The patient had been quite well, save for a profuse white vaginal discharge, until five days after delivery, when she developed slight stiffness of the neck and trismus. This had become progressively worse, and on admission the trismus and cervical stiffness had become very severe. Swallowing had become difficult, and in addition she complained of lower abdominal pain and backache.

Examination showed an ill, poorly nourished young woman. Her skin was covered with the pigmented macules of old smallpox. There was marked trismus, neck retraction, and rigidity of the abdominal and back muscles. Her temperature was 101° F. (38.3° C.) and the pulse 104. The gynaecological report (Dr. J. G. Dumoulin) was: "Per abdomen, the fundus is up to the umbilicus and slightly tender; there is no tenderness in the iliac fossae. Per vaginam, a slight greenish-yellow discharge is present. The uterus is bulky and tender. There is nothing abnormal in the fornices. No active gynaecological treatment is required."

Treatment was started with antitetanus serum, 200.000 units intramuscularly, sodium amytal, 0.5 g. intramuscularly at 10 a.m. and 6 p.m., phenobarbitone 2 gr. orally four-hourly day and night, and procaine penicillin 1 ml. intramuscularly daily.

On June 18 the patient had developed full tetanic spasms. These occurred every two minutes. The temperature was 102.5° F. (39.15° C.) and the pulse 120. She was still able to swallow with difficulty. Sodium amytal, 0.5 g., was given at 10 a.m., 2 p.m., and 10 p.m. On June 19 the tetanic spasms had become almost continuous. Sodium amytal, 0.5 g., was given intramuscularly at 6 a.m. At 10 a.m. the temperature rose to 104° F. (40° C.) and the patient became stuporous. She died at 11 a.m.

Impression.—A severe and rapidly fatal case of puerperal tetanus, with terminal hyperpyrexia.

Discussion

It is not the purpose of this paper to discuss the treatment of tetanus, other than to advocate the prophylactic administration of antitetanus serum in the Tropics before undertaking any gynaecological operation, major or minor, and to all obstetrical cases that require intervention. In patients admitted with a retained placenta it is also advisable to give antitetanus serum to the baby in view of the local method of treating the cord before admission.

Tetanus associated with eclampsia seems to have been unrecorded. In Case 1 there was an interval of five and a half days between the last eclamptic fit and the onset of tetanus, from which the patient died two days later. The difference between the two types of fits was striking and clear-cut. Despite the onset of tetanus, the signs of toxaemia of pregnancy did not recur. In addition, the naked-eye and microscopical appearances at necropsy did not reveal any abnormality that could be attributed to eclampsia, from which, therefore, the patient seems to have recovered completely.

The terms "tetanus uteri," "tetanic contraction of the uterus," and "tetany of the uterus," as used by most American authors, are confusing and illustrate the need for greater uniformity and precision in obstetric nomenclature.

It is probable that the incidence of tetanus in Ibadan is much higher than case records indicate, as local women prefer domiciliary confinements and do not readily seek hospital advice for puerperal complications.

Summary

Five cases of puerperal tetanus are recorded, one of which followed eclampsia. The prevalence of tetanus is discussed in especial relation to local primitive conditions. The importance of prophylactic antitetanus serum in obstetrical and gynaecological practice in tropical countries is stressed.

References

Brain, W. R. (1940). *Diseases of the Nervous System*, p. 686. London.
Cecil, R. L. (1947). *Textbook of Medicine*, p. 217. Philadelphia.
De Lee, J. B. (1947). *Principles and Practice of Obstetrics*, 9th ed., p. 436. Philadelphia.
Harries, E. H. R., and Mitman, M. (1947). *A Clinical Practice of Infectious Diseases*, p. 557. Edinburgh.
Jelliffe, D. B. (1950). *Arch. Dis. Childh.*, **25**, 190.
Kerrin, J. C. (1929). *Brit. J. exp. Path.*, **10**, 370.
Price, F. W. (1946). *A Textbook of the Practice of Medicine*, p. 55. London.
Rogers, L. (1944). *Indian med. Gaz.*, **79**, 297.
Schneider, G. H. (1926). *Med. Klinik*, **22**, 134.
Stander, H. J. (1935). Williams's *Obstetrics*, p. 1333. New York.
Tidy, H. L. (1939). *A Synopsis of Medicine*, p. 126. Bristol.
Weinstein, B. B., and Beacham, W. D. (1941). *Amer. J. Obstet. Gynec.*, **42**, 1031.
Whitby, L. E. H. (1938). *Medical Bacteriology*, p. 168. London.

In co-operation with national government, and with Unicef, W.H.O. has launched practical malaria-control projects in four rural areas in India, as well as one in Thailand and two in Afghanistan, since the opening of its regional office in New Delhi in January, 1949. A W.H.O. venereal-disease-control project is operating successfully in North India. Maternal and child-health projects have begun in India and, in co-operation with Unicef, in Afghanistan. W.H.O. is participating with Unicef in yaws-control projects in Indonesia and Thailand. W.H.O. fellowships have enabled 61 doctors and health workers from countries of South-east Asia to obtain advanced training abroad, and a sum of $40,600 has been allotted by W.H.O. to countries in the region for the purchase of urgently needed medical literature and teaching equipment. Assistance has been given to Ceylon in its anti-filariasis campaign, and to Afghanistan in fighting louse-borne typhus. W.H.O. experts in the treatment and rehabilitation of poliomyelitis victims have given training courses in India to local health workers. This W.H.O. regional office for South-east Asia is one of the three regional offices already established by the organization, the other two serving the eastern Mediterranean region and the Americas (Pan-American Sanitary Bureau). In addition, temporary offices for Europe and the Western Pacific are functioning in Geneva and Hong Kong, respectively.

SEVEN CASES OF BARIUM CARBONATE POISONING

BY

GEOFFREY DEAN, M.B., M.R.C.P.

Port Elizabeth, South Africa

Seven patients were given barium carbonate for barium-meal investigations in December, 1948. Pure barium carbonate is a white powder exactly similar in appearance to barium sulphate and is commonly used as a rat poison. It had been placed by mistake in the barium sulphate container at the wholesale premises, and was therefore dispensed instead of barium sulphate in the preparation of the barium cream supplied to the radiologist. The quantity administered in all cases except the fatal one was a glassful, which was later shown to be equivalent to 4.26 oz. (133 g.) of dry barium carbonate. In the fatal case half this quantity was administered.

Case Reports

Case 1.—A healthy man aged 48 swallowed a chicken bone which lodged in his oesophagus. Forty hours later he was sent for *x*-ray examination. He swallowed half a glass of barium cream. The *x*-ray film confirmed the presence of the bone and he was admitted to hospital for its removal. An hour and a half after the barium swallow he was examined by the anaesthetist, who found him fit except for a raised blood pressure, 180/130, which was attributed to nervousness. While his throat was being sprayed with cocaine and adrenaline he vomited. He was given "omnopon," ¼ gr. (22 mg.), and hyoscine, 1/100 gr. (0.65 g.). Half an hour later 0.7 g. of thiopentone and 8 mg. of "tubarine" were given. The bone was not impacted and was removed uneventfully. The patient recovered from the anaesthetic, and then started to vomit and purge; this was accompanied by severe griping abdominal pain, tenesmus, and the desire to micturate. He was very thirsty and soon began to complain of heaviness in his limbs and coldness. The vomiting ceased but the diarrhoea continued, he sweated profusely, and his pulse became thready and irregular; his temperature was normal and his mind clear. He was treated with warmth, hot drinks, intravenous glucose saline, nikethamide, adrenaline, and brandy. His pulse became imperceptible, and 11 hours after the operation and 13 hours after the barium he died. At necropsy acid-soluble barium compound was found in the stomach, liver, and kidneys. The equivalent of 2.75 gr. (0.18 g.) of barium carbonate was recovered from the stomach.

Case 2.—This patient was given a full glass of barium cream (equivalent to 4 oz. of barium carbonate). An hour later he started to vomit and had diarrhoea with abdominal colic; his vision was blurred. He was taken to his family doctor, who found him shocked, cyanosed, and sweating, and able to move his limbs only with great difficulty. He complained of heaviness in the arms and legs, he could talk only in a whisper, his pulse was slow and irregular; his mind was clear. I was called in consultation and advised warmth, hot drinks, nikethamide, and a sedative. Eight hours after the barium he was still able to move his limbs only with great difficulty; he had no convulsions. His pulse was 90 and still irregular. An electrocardiogram showed extrasystoles. His blood pressure was 160/100. The reflexes were all present but diminished; the Babinski responses were flexor. Twelve hours later he was improving, but remained in bed in the doctor's house extremely ill for over a week.

Case 3.—A married woman aged about 30 was given a full glass of the cream. Within two hours her face felt stiff and her vision was blurred. A little later vomiting started, followed by diarrhoea and tenesmus. When examined three hours after the meal she was weak, cyanosed, and sweating; her mind was clear, and her pulse was grossly irregular. Her blood pressure was 180/110. An electrocardiogram showed extrasystoles. The muscles of the arms and legs were painful and extremely weak, and she could move only with the greatest difficulty. All the reflexes were present but greatly reduced; there were no convulsive movements. She was immediately admitted to hospital, treated for shock, and given magnesium sulphate—a known antidote for barium carbonate, reacting with it to form insoluble barium sulphate. The weakness of her limbs and irregularity of the heart persisted for nearly a week, but she eventually recovered and was discharged after 16 days in hospital.

Case 4.—A pensioner with hypertensive failure was given a full glass of the cream for a barium meal. Vomiting and diarrhoea started after he returned home. However, he was not so ill as the other patients, perhaps because he had an achlorhydria, or at least a hypochlorhydria, which prevented or diminished the formation of barium chloride in his stomach. Also he took castor oil and, later, Epsom salts. He was admitted to hospital, where I saw him. Two days later he said he felt fitter than for many months. The dyspnoea which had greatly troubled him was much improved; this was considered to be due to the digitalis-like action of soluble barium salts on the heart muscle. Ten days later, however, he had a small cerebral thrombosis, followed after four days by a second which resulted in a left hemiplegia. He gradually recovered, but two months later a fall from his chair resulted in a large extradural haemorrhage and he died within a few days. In this case an elderly man with a weakened myocardium recovered from 4 oz. of barium carbonate; his death may have been indirectly due to the poisoning.

Case 5.—A married woman drank a full glass of the cream for a barium meal. About an hour later she felt as if her face was distorted and her lips were swollen; she complained of double vision. Vomiting, diarrhoea, and tenesmus soon followed. When seen by her family doctor she was cold and collapsed, in a state of shock, with a highly irregular pulse. Several hours later magnesium sulphate was given and she gradually recovered over the course of a few days.

Case 6.—A man was given a full glass of the barium cream and was told to take two teaspoonfuls of Epsom salts in an hour's time to keep the contents of the intestines liquid and so help to outline the appendix. He returned nearly five hours later, having vomited once but otherwise feeling well. In this case the taking of magnesium sulphate had apparently prevented harmful absorption.

Case 7.—This patient left by ship on the same day that he swallowed a glassful of the barium carbonate cream for *x*-ray purposes. He also vomited and had diarrhoea, and was given magnesium sulphate, but no further details are available.

Comment

The quantity of barium carbonate given in a glass of barium cream was estimated by the government analytical chemist at Port Elizabeth. He found that a full tumbler of the cream used contained 4.26 oz. (133 g.) of dry barium carbonate. All six patients who took this amount recovered. In the fatal case it was estimated that the patient, who was given half a glassful of barium cream, took three mouthfuls; this amount was estimated to contain approximately 1.7 oz. (53 g.).

In the stomach barium carbonate is converted by the free hydrochloric acid, if present, into barium chloride; it is absorbed from the small intestine and not from the stomach; there is, therefore, a time lag before symptoms become apparent.

Sydney Smith and Cook (1948) quote two fatal cases of barium carbonate poisoning after the ingestion of 1 dr. (4 g.). Fatal cases have also been recorded after 60 gr. (4 g.) of barium chloride (Blythe and Blythe, 1920; Sydney Smith, 1943) and after 12 gr. (0.8 g.) (Goodman and Gilman, 1941).

On June 7 the trismus and neck rigidity had become much more pronounced, though she was still able to swallow. Stiffness of the muscles of the back and the abdomen had developed. There were no generalized tetanic spasms. Treatment was continued with phenobarbitone, 2 gr. four-hourly, and crystalline penicillin, 100,000 units intramuscularly twice daily. During the following week no real change occurred in the patient's condition. She was able to swallow and continued to feed the baby. On June 16 she had improved considerably, the stiffness of the cervical, abdominal, and back muscles having become much less. Phenobarbitone was reduced to 2 gr. three times a day and the penicillin was discontinued.

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References

Brain, W. R. (1940). *Diseases of the Nervous System*, p. 686. London.
Cecil, R. L. (1947). *Textbook of Medicine*, p. 217. Philadelphia.
De Lee, J. B. (1947). *Principles and Practice of Obstetrics*, 9th ed., p. 436. Philadelphia.
Harries, E. H. R., and Mitman, M. (1947). *A Clinical Practice of Infectious Diseases*, p. 557. Edinburgh.
Jelliffe, D. B. (1950). *Arch. Dis. Childh.*, **25**, 190.
Kerrin, J. C. (1929). *Brit. J. exp. Path.*, **10**, 370.
Price, F. W. (1946). *A Textbook of the Practice of Medicine*, p. 55. London.
Rogers, L. (1944). *Indian med. Gaz.*, **79**, 297.
Schneider, G. H. (1926). *Med. Klinik*, **22**, 134.
Stander, H. J. (1935). Williams's *Obstetrics*, p. 1333. New York.
Tidy, H. L. (1949). *A Synopsis of Medicine*, p. 126. Bristol.
Weinstein, B. B., and Beacham, W. D. (1941). *Amer. J. Obstet. Gynec.*, **42**, 1031.
Whitby, L. E. H. (1938). *Medical Bacteriology*, p. 168. London.

In co-operation with national government, and with Unicef, W.H.O. has launched practical malaria-control projects in four rural areas in India, as well as one in Thailand and two in Afghanistan, since the opening of its regional office in New Delhi in January, 1949. A W.H.O. venereal-disease-control project is operating successfully in North India. Maternal and child-health projects have begun in India and, in co-operation with Unicef, in Afghanistan. W.H.O. is participating with Unicef in yaws-control projects in Indonesia and Thailand. W.H.O. fellowships have enabled 61 doctors and health workers from countries of South-east Asia to obtain advanced training abroad, and a sum of $40,600 has been allotted by W.H.O. to countries in the region for the purchase of urgently needed medical literature and teaching equipment. Assistance has been given to Ceylon in its anti-filariasis campaign, and to Afghanistan in fighting louse-borne typhus. W.H.O. experts in the treatment and rehabilitation of poliomyelitis victims have given training courses in India to local health workers. This W.H.O. regional office for South-east Asia is one of the three regional offices already established by the organization, the other two serving the eastern Mediterranean region and the Americas (Pan-American Sanitary Bureau). In addition, temporary offices for Europe and the Western Pacific are functioning in Geneva and Hong Kong, respectively.

SEVEN CASES OF BARIUM CARBONATE POISONING

BY

GEOFFREY DEAN, M.B., M.R.C.P.

Port Elizabeth, South Africa

Seven patients were given barium carbonate for barium-meal investigations in December, 1948. Pure barium carbonate is a white powder exactly similar in appearance to barium sulphate and is commonly used as a rat poison. It had been placed by mistake in the barium sulphate container at the wholesale premises, and was therefore dispensed instead of barium sulphate in the preparation of the barium cream supplied to the radiologist. The quantity administered in all cases except the fatal one was a glassful, which was later shown to be equivalent to 4.26 oz. (133 g.) of dry barium carbonate. In the fatal case half this quantity was administered.

Case Reports

Case 1.—A healthy man aged 48 swallowed a chicken bone which lodged in his oesophagus. Forty hours later he was sent for *x*-ray examination. He swallowed half a glass of barium cream. The *x*-ray film confirmed the presence of the bone and he was admitted to hospital for its removal. An hour and a half after the barium swallow he was examined by the anaesthetist, who found him fit except for a raised blood pressure, 180/130, which was attributed to nervousness. While his throat was being sprayed with cocaine and adrenaline he vomited. He was given "omnopon," ¼ gr. (22 mg.), and hyoscine, 1/100 gr. (0.65 g.). Half an hour later 0.7 g. of thiopentone and 8 mg. of "tubarine" were given. The bone was not impacted and was removed uneventfully. The patient recovered from the anaesthetic, and then started to vomit and purge; this was accompanied by severe griping abdominal pain, tenesmus, and the desire to micturate. He was very thirsty and soon began to complain of heaviness in his limbs and coldness. The vomiting ceased but the diarrhoea continued, he sweated profusely, and his pulse became thready and irregular; his temperature was normal and his mind clear. He was treated with warmth, hot drinks, intravenous glucose saline, nikethamide, adrenaline, and brandy. His pulse became imperceptible, and 11 hours after the operation and 13 hours after the barium he died. At necropsy acid-soluble barium compound was found in the stomach, liver, and kidneys. The equivalent of 2.75 gr. (0.18 g.) of barium carbonate was recovered from the stomach.

Case 2.—This patient was given a full glass of barium cream (equivalent to 4 oz. of barium carbonate). An hour later he started to vomit and had diarrhoea with abdominal colic; his vision was blurred. He was taken to his family doctor, who found him shocked, cyanosed, and sweating, and able to move his limbs only with great difficulty. He complained of heaviness in the arms and legs, he could talk only in a whisper, his pulse was slow and irregular; his mind was clear. I was called in consultation and advised warmth, hot drinks, nikethamide, and a sedative. Eight hours after the barium he was still able to move his limbs only with great difficulty; he had no convulsions. His pulse was 90 and still irregular. An electrocardiogram showed extrasystoles. His blood pressure was 160/100. The reflexes were all present but diminished; the Babinski responses were flexor. Twelve hours later he was improving, but remained in bed in the doctor's house extremely ill for over a week.

Case 3.—A married woman aged about 30 was given a full glass of the cream. Within two hours her face felt stiff and her vision was blurred. A little later vomiting started, followed by diarrhoea and tenesmus. When examined three hours after the meal she was weak, cyanosed, and sweating; her mind was clear, and her pulse was grossly irregular. Her blood pressure was 180/110. An electrocardiogram showed extrasystoles. The muscles of the arms and legs were painful and extremely weak, and she could move only with the greatest difficulty. All the reflexes were present but greatly reduced; there were no convulsive movements. She was immediately admitted to hospital, treated for shock, and given magnesium sulphate—a known antidote for barium carbonate, reacting with it to form insoluble barium sulphate. The weakness of her limbs and irregularity of the heart persisted for nearly a week, but she eventually recovered and was discharged after 16 days in hospital.

Case 4.—A pensioner with hypertensive failure was given a full glass of the cream for a barium meal. Vomiting and diarrhoea started after he returned home. However, he was not so ill as the other patients, perhaps because he had an achlorhydria, or at least a hypochlorhydria, which prevented or diminished the formation of barium chloride in his stomach. Also he took castor oil and, later, Epsom salts. He was admitted to hospital, where I saw him. Two days later he said he felt fitter than for many months. The dyspnoea which had greatly troubled him was much improved; this was considered to be due to the digitalis-like action of soluble barium salts on the heart muscle. Ten days later, however, he had a small cerebral thrombosis, followed after four days by a second which resulted in a left hemiplegia. He gradually recovered, but two months later a fall from his chair resulted in a large extradural haemorrhage and he died within a few days. In this case an elderly man with a weakened myocardium recovered from 4 oz. of barium carbonate; his death may have been indirectly due to the poisoning.

Case 5.—A married woman drank a full glass of the cream for a barium meal. About an hour later she felt as if her face was distorted and her lips were swollen; she complained of double vision. Vomiting, diarrhoea, and tenesmus soon followed. When seen by her family doctor she was cold and collapsed, in a state of shock, with a highly irregular pulse. Several hours later magnesium sulphate was given and she gradually recovered over the course of a few days.

Case 6.—A man was given a full glass of the barium cream and was told to take two teaspoonfuls of Epsom salts in an hour's time to keep the contents of the intestines liquid and so help to outline the appendix. He returned nearly five hours later, having vomited once but otherwise feeling well. In this case the taking of magnesium sulphate had apparently prevented harmful absorption.

Case 7.—This patient left by ship on the same day that he swallowed a glassful of the barium carbonate cream for *x*-ray purposes. He also vomited and had diarrhoea, and was given magnesium sulphate, but no further details are available.

Comment

The quantity of barium carbonate given in a glass of barium cream was estimated by the government analytical chemist at Port Elizabeth. He found that a full tumbler of the cream used contained 4.26 oz. (133 g.) of dry barium carbonate. All six patients who took this amount recovered. In the fatal case it was estimated that the patient, who was given half a glassful of barium cream, took three mouthfuls; this amount was estimated to contain approximately 1.7 oz. (53 g.).

In the stomach barium carbonate is converted by the free hydrochloric acid, if present, into barium chloride; it is absorbed from the small intestine and not from the stomach; there is, therefore, a time lag before symptoms become apparent.

Sydney Smith and Cook (1948) quote two fatal cases of barium carbonate poisoning after the ingestion of 1 dr. (4 g.). Fatal cases have also been recorded after 60 gr. (4 g.) of barium chloride (Blythe and Blythe, 1920; Sydney Smith, 1943) and after 12 gr. (0.8 g.) (Goodman and Gilman, 1941).

The pharmacology of barium has been described by Cushny (1936), who states that its chief action is to strengthen the contraction of all forms of muscle, probably by direct action on the contractile tissue. In this outbreak the effect on muscle greatly predominated over any other action: striated muscle, non-striated muscle, and the cardiovascular musculature were all affected.

In the above cases the first symptom to appear was often a peculiar stiffness about the mouth, accompanied by blurring of vision. This was rapidly followed by salivation, nausea, vomiting, diarrhoea, severe colic, tenesmus, and an intense desire to pass water. Within an hour skeletal-muscle weakness became pronounced and movement was difficult; the legs were weaker than the arms. The typical patient appeared clammy and pale, realized he was desperately ill, and talked only in a whisper; the pulse was extremely irregular, probably owing to very frequent extrasystoles; the blood pressure was raised. Even when *in extremis* the pulse did not become fast, but remained irregular and gradually became weaker. In no case was there convincing evidence of any direct poisonous action on the central nervous system; the mind always remained clear, there were no convulsions or tetanic contractions, the reflexes were diminished but not absent, the plantar responses were flexor, and there was no true paralysis.

Summary and Conclusion

Seven cases of poisoning by pure barium carbonate are described, only one of which was fatal. In this case the barium was followed by heavy sedation and an anaesthetic, which delayed vomiting and purging. The dose administered in all cases was many times that usually considered lethal. The large amount of barium carbonate administered caused rapid onset of vomiting and diarrhoea, which may account for recovery where a smaller dose might have been fatal. Magnesium sulphate, which was given in some cases, proved an excellent antidote. The symptoms were remarkably constant and all of them could be attributed to direct action on muscle. There was no evidence of any effect on the central nervous system: in this respect our views on alimentary barium poisoning should be reviewed; it may be that some of the symptoms described by other authors were due to impurities in the barium.

Finally, I would make the suggestion that barium carbonate, which in its pure form is a white powder, should be coloured by a distinctive dye so that the above mistake does not occur again.

I would like to thank all the doctors concerned with these cases for their help and co-operation in the preparation of this article.

Bibliography

Allen, A. S. (1943). *Chin. med. J.*, **61**, 296.
Blythe, A. W. and M. W. (1920). *Poisons: their Effects and Detection*. London.
Chopra, R. N., and Chakravarty, B. (1940). *Indian med. Gaz.*, **75**, 330.
Chou, C., and Chin, Y. C. (1943). *Chin. med. J.*, **61**, 313.
Cushny, A. R. (1936). *Pharmacology and Therapeutics*. London.
Du, K. T., and Dung, C. L. (1943). *Chin. med. J.*, **61**, 302.
Goodman, L., and Gilman, A. (1941). *Pharmacological Basis of Therapeutics*, p. 608. New York.
Hale-White, W. (1947). *Materia Medica*. London.
Hirvonen, M. (1944). *Acta med. scand.*, **119**, 112.
Huang, Keh-Wei (1943). *Chin. med. J.*, **61**, 305.
Ku, D. Y., Yen, C. K., and Li, C. C. (1934). Ibid., **61**, 303.
Monteiro, E. S., and Pallister, R. A. (1946). *Med. J. Malaya*, **1**, 7.
Morton, W. (1945). *Lancet*, **2**, 738.
Smith, Sydney (1943). *Forensic Medicine*. London.
—— and Cook, W. G. H. (1948). *Taylor's Principles and Practice of Medical Jurisprudence*, 10th ed. London.

The address of the staff side secretary of the General Council and the Administrative and Clerical Staffs Council of the Whitley Councils for the Health Services (Great Britain) is now 75, Portland Place, London, W.1 (Telephone, Langham 5041).

Medical Memoranda

Latent Amoebic Dysentery

The following case is of interest on account of the exceptionally long interval between infection and the development of symptoms, and because the diagnosis of amoebic dysentery was at first missed in spite of considerable investigation. It raises, too, the problem of whether the infection was contracted abroad or was of indigenous origin.

Case Report

The patient, an intelligent man aged 60, had spent much of his early life abroad with the Army. He had had little illness apart from malaria, and, although he had never had injection treatment for dysentery, he had been admitted to Army hospitals three times for diarrhoea whilst on active service in Mesopotamia between 1916 and 1918. He returned finally to England in 1919 and five years later left the Army to become a postman. He remained in good health until January, 1944, when he developed intermittent diarrhoea following the death of his youngest daughter from encephalitis. He lost weight, the diarrhoea continued, and his general condition deteriorated. Six months later he was admitted to a general hospital, where a diagnosis of ulcerative colitis was made. The condition improved following sulphaguanidine treatment, but after his discharge from hospital relapses became more frequent, especially during the winter, and he was compelled to retire from public service in June, 1945.

In the autumn of 1947 he contracted whooping-cough and it was for that reason that I first saw him. He looked extremely ill, very pale, and emaciated, and he had a severe glossitis. Diarrhoea was troublesome, with six to ten motions daily, the stools containing both blood and mucus. He weighed only 8 st. (50.1 kg.).

A blood count showed: haemoglobin, 45%; red cells 4,000,000 per c.mm. I assumed the previous diagnosis of ulcerative colitis to be correct, and therefore gave him a course of sulphaguanidine, followed by oral iron and injections of crude liver and riboflavin.

Two months later the whooping-cough had completely subsided, but the diarrhoea persisted. The possibility of this being a case of amoebic dysentery had by now occurred to me, and he was eventually admitted to hospital on February 2, 1948, for further investigation. Next day a sigmoidoscopy (8 in.—20 cm.) revealed several crateriform ulcers with haemorrhage suggestive of chronic amoebic dysentery. The stools were examined microscopically, and amoebae containing ingested erythrocytes and exhibiting pseudopodial motility characteristic of *Entamoeba histolytica* were observed in two separate specimens. A radiograph of the chest and screening showed the right diaphragm to be raised and the right costophrenic angle to be partly obscured. The white blood cells numbered 8,300, with 86% polymorphs and 1% eosinophils.

A comprehensive course of treatment was instituted combining succinylsulphathiazole, emetine hydrochloride, chiniofon retention enemata, emetine and bismuth iodide capsules, and acetarsol tablets. Vitamin B complex and "fersolate" tablets were given orally, together with a low-residue diet. The response to treatment was most satisfactory. Bowel action became normal after the fifth day of treatment and by the end of one month the patient had gained 28 lb. (12.7 kg.) in weight. By then sigmoidoscopy showed an almost normal mucosa and the stools were negative for *E. histolytica* cysts. A blood count showed: haemoglobin, 75%; red cells, 5,300,000 per c.mm.

Convalescence was progressive and uneventful, and six months later he had regained all but 3 lb. (1.4 kg.) of his normal 12 st. (76.2 kg.) weight, and was able to undertake light work. A year after treatment sigmoidoscopy revealed no ulcers and no *E. histolytica* cysts.

COMMENT

It seems very improbable that this was a case of indigenous amoebic dysentery, and much more likely that it was a relapse from a previously unrecognized infection contracted abroad. That *E. histolytica* may remain dormant for many years before giving rise to symptoms is well known. Many cases of amoebic abscess of the liver are found up to 30 years after the primary infection. It is much less common for amoebic dysentery to recur after such a long interval of freedom. In this case it is estimated to be 28 years, which so far as I can discover is the longest interval on record. Dobell and Stevenson (1918) described a case diagnosed 34 years after the original infection, but the patient had had subacute dysentery for ten years before their investigation and consequent discovery of *E. histolytica* in the stools.

It may be salutary to recall that Manson-Bahr (1943) states that ulcerative or mucous colitis not infrequently follows amoebic dysentery. Perhaps there are other cases of supposed ulcerative colitis like this one, in which an unrecognized infection of *E. histolytica* is the underlying cause of symptoms.

I am indebted to Dr. Carey Lynch, pathologist, Torbay Hospital, for confirming the presence of *E. histolytica* in the stools.

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REFERENCES

Dobell, C., and Stevenson, A. C. (1918). *Trans. Soc. trop. Med.*, **11**, 4.

Manson-Bahr, P. H. (1943). *The Dysenteric Disorders*, 2nd ed. Cassell, London.

Two Cases of Paratyphoid Fever Treated with Chloramphenicol

Comparatively few cases of paratyphoid fever treated with chloramphenicol have so far been reported, and there seems to be an impression that paratyphoid infection may be more resistant to chloramphenicol than is typhoid infection (*British Medical Journal*, 1949, **2**, 919).

It is, fortunately, not easy, at any rate in this country and at the present time, to find opportunity of trying out the drug on a large series of paratyphoid infections. If a comparatively large outbreak did occur it might be difficult or even unjustifiable on humanitarian grounds to take strictly alternate cases as controls if, as seems likely, chloramphenicol is potently curative. In these circumstances it may be of interest to report the following two cases of paratyphoid fever (both of type B and Vi phage type 1) recently treated with chloramphenicol.

CASE 1

A girl aged 4½ was admitted for investigation on September 1, 1949, in about her tenth day of disease, as a case of continued pyrexia. There had also been malaise, anorexia, headache, stiffness of the neck, and a tendency to several loose motions a day in the three days or so before admission. Examination did not reveal any conclusive physical signs, but toxaemia was fairly marked, the child being pale, limp, and supine, with a temperature of 103° F. (39.4° C.).

Culture of a rectal swab on the day after admission, and a faecal specimen on September 4, gave a growth of *Salmonella paratyphi B*. Blood culture was negative. The Widal reaction was: *Salm. paratyphi B* H, 1 in 500; O, 1 in 250; other groups, negative. There was no history of T.A.B. inoculations. Chloramphenicol was administered from September 4 to 12, a total of 6.25 g. being given, beginning with one capsule (0.25 g.) and following with half a capsule (0.125 g.) every four hours until the course was terminated. The patient's general condition showed clear improvement within 36 hours, but her temperature, though showing marked decline within this period (indeed the first normal reading occurred as early as 40 hours after the drug was first given), did not reach persistently normal levels until the fifth day of the drug. No further positive cultures from repeated faecal specimens were obtained, and she was discharged home on October 8 apparently in very good health.

CASE 2

A youth aged 19 was admitted on September 22, 1949, in about the twelfth day of disease. His illness began rather suddenly with diarrhoea, which largely cleared up after about five days; there was no diarrhoea after admission. In the meantime, toxaemia had become increasingly evident, and, when admitted, his tongue was dry and brown, there was a profuse crop of rose spots, and his temperature on the evening of the day of admission was 104° F. (40° C.) and pulse 68.

Blood cultures and faeces gave a growth of *Salm. paratyphi B*. The Widal reaction was: *Salm. typhi* H, 1 in 5,000; *Salm. paratyphi B* H, 1 in 5,000; *Salm. typhi* O, negative; *Salm. paratyphi B* O, negative. There was no history of T.A.B. inoculations. Chloramphenicol was started on September 24 with six capsules (1.5 g.), followed in two hours by six more capsules, then one capsule (0.25 g.) every two hours until September 27, then four-hourly until October 1, and six-hourly until October 3—a total of 21 g. The temperature showed a downward trend inside 24 hours of the drug being commenced, and the first normal four-hourly reading occurred in about 48 hours from the start. It became persistently normal on the sixth day of administration, in spite of a temporary return to somewhat higher levels on the fourth and fifth days. This rise followed and may have been related to a decision not to wait for the temperature to become completely normal before making a reduction in the dosage from 0.25 g. two-hourly to 0.25 g. four-hourly at the beginning of the fourth day of treatment. A bolder dosage policy might, therefore, have resulted in an earlier return to normal temperature. Faecal cultures from the patient were still positive on October 26.

COMMENT

Toxic reactions that could be attributed to the drug were not observed in either case, and the drug was well tolerated and easily given. There was a strong clinical impression that improvement in the general condition proceeded at a faster pace than resolution of the pyrexia. It is possible that either of these two cases would have improved during the same period without the drug being given. Nevertheless, it is a fact that they both improved in a similar fashion whilst having the drug, and that clinical amelioration was evident within 24 to 48 hours of the drug being started. In the second case, particularly, toxaemia was sufficiently pronounced to have given rise to the fear of a prolonged and stormy course.

Acknowledgment is due to Dr. R. E. Jones, of the Coventry Laboratory of the Public Health Laboratory Service, for bacteriological data.

J. F. GALPINE, M.D., M.R.C.P.Ed., D.P.H., D.C.H.
JOYCE W. BROWN, M.B., D.P.H.

A scholarship of £100 to £150 will be awarded by the National Association for the Prevention of Tuberculosis to a registered female nurse working at the time of her application in a hospital in Scotland. The scholarship will enable her to spend a period of from three to six months in postgraduate study in hospitals or clinics in (*a*) Scotland, (*b*) England, or (*c*) Scandinavia. Particulars may be obtained from Miss A. J. Weir, Scottish Secretary, N.A.P.T., 65, Castle Street, Edinburgh, 2, by December 1.

Reviews

CHEMOTHERAPY

Recent Advances in Chemotherapy. By G. M. Findlay, C.B.E., Sc.D., M.D., F.R.C.P. Third edition. Volume 1. (Pp. 625. £1 16s.) London: J. and A. Churchill. 1950.

The responsibilities of an author in the "Recent Advances" series vary greatly with his subject. Anatomy, for instance, is comparatively static, and progress in a number of other branches of medicine is not so rapid that a new edition requires more than one or two new chapters and scattered additions and subtractions elsewhere. But the task facing the author of the volume on chemotherapy, of which the last edition appeared in 1939, was truly formidable, and he has met it with such determination that he is expanding one volume into four. Of those which have yet to appear, one will be exclusively on malaria, the third on bacterial, rickettsial, and virus infections, and the fourth on sulphonamides and antibiotics and general principles. In this arrangement it seems that the last volume must involve some repetition of the third, but when it has been carried through the series will be, so far as can at present be foreseen, the only up-to-date account of a form of progress which has already changed the face of medicine and bids fair to transform it into almost a new subject. It may well be that psychiatry and geriatrics will take the leading places in the medicine of the future, the treatment or prevention of microbic infection having become so simple as to take a quite secondary place.

The main subject of this the first volume is protozoal infections other than malaria, and the account of trypanosomiasis naturally occupies most space, next to it in importance coming leishmaniasis and amoebic dysentery. Among minor infections of this kind, trichomoniasis and giardiasis are alone in having almost everyday interest in this country; otherwise the appeal of the greater part of this volume is mainly to the worker abroad. These chapters are prefaced by one on diseases due to "insects," which is mainly about scabies, and another on helminthic infestations, where the author discusses chiefly schistosomiasis and the new work on filariasis resulting from American occupation of the Pacific. He includes an account of the uses of phenothiazine and newer methods of eliminating cestodes and nematodes generally. The volume as a whole is a reminder that, while progress has been much more spectacular against bacteria and protista, medicine has been far from slow in combating animal parasites of all kinds. When they are described and appraised together, the number of effective new drugs available for these purposes is surprising.

The reader will form a deep respect for the author's knowledge of chemistry and pharmacology, and for the industry with which he has collected so great a mass of information about the treatment of such a variety of diseases. He will particularly appreciate the somewhat cynical humour often displayed, and frequent references to the early history of the subject, even extending to the pre-Christian era and attributing the invention of chemotherapeutic aerosols to Tobias. We are reminded in connexion with fleas that they apparently had an aversion to Pepys, and referred to a recent paper in which it is recorded that a certain man's sweat was lethal to ticks: "When they fed on him they fell off dead." It is disappointing that the only illustrations are chemical formulae, and sometimes an assessment of the relative value of the several new drugs described for a single purpose seems lacking. The chapter on amoebiasis was evidently written too early to accord "aureomycin" its rightful place in this connexion, but such omissions are inevitable in any work on so rapidly expanding a subject. The whole book is very fully documented, titles of papers as well as references being given. This volume is in itself a great achievement: its companions will be awaited with keen interest, and even with some anxiety lest this herculean task should prove to be beyond the capacity of a single author.

L. P. Garrod.

IDENTIFICATION OF TUMOUR CELLS

The Cytologic Diagnosis of Cancer. By the staff of the Vincent Memorial Laboratory of the Vincent Memorial Hospital, Boston. (Pp. 229; illustrated. £1 13s.) Philadelphia and London: W. B. Saunders Company. 1950.

All experienced histopathologists practise "cytologic diagnosis" in that they search for, and sometimes find, undoubted tumour cells in various body fluids and secretions. Of recent years there has sprung up a group of enthusiasts in this field who claim to have attained a proficiency much superior to that of other histologists and to be able to identify isolated tumour cells with great accuracy. This book is by such a group. It is essentially an atlas of photomicrographs designed to show the diagnostic features of malignant cells in smears from secretions and effusions. The illustrations are beautifully produced; and, if pictorial evidence capable of settling the doubts of more cautious pathologists were forthcoming, we might expect to find it here. But it is not so; the following grounds for doubt remain.

While some of the figures show indubitable tumour cells which we can all recognize, there are many others—for example, 36, 38, 41, 44, 46, 47, to mention only a few—in which the nature of the supposed tumour cells is at least arguable, and we may wonder if the authors may not be misled by their own enthusiasm. There will be many pathologists who will not agree that irregularity of chromatin, "glazing" of nuclei, wrinkled nuclear borders, and cytoplasmic or nuclear vacuolation are as diagnostic of malignancy as the authors suppose.

The authors give no details about the patients from whom the smears came, so that we cannot judge of the validity of the diagnoses attached to the doubtful pictures. There have been cases recorded in detail by advocates of the method—for example, that of Gates and her colleagues (*Cancer*, 1949, **2**, 838)—in which "malignant" cells were repeatedly identified by "experts" but no tumour could be found subsequently in the surgically removed uterus.

The book gives no statistical evidence of the accuracy of the authors' methods and criteria, because, they say, this is "available in the numerous papers in the literature." The reviewer questions this, on the ground set out in the preceding paragraph, and on the same grounds as did Ferguson (*Cancer*, 1949, **2**, 845), who pointed out that the proportion of false positive misdiagnoses is, on the figures of the enthusiasts themselves, far from negligible, ranging between 5% and 30% of their positive smear diagnoses.

The authors give no evidence that they are well acquainted with tissue pathology; indeed, there is evidence to the contrary. Thus, they say nothing of those cases—far from rare, especially in the cervix uteri—in which competent pathologists have real difficulty in deciding from serial sections of a small lesion whether it is an early cancer or merely a hyperplasia or metaplasia. They say nothing of the fact that not a few malignant tumours consist of well-differentiated cells which, in isolation, do not differ structurally from normal or hyperplastic cells. They say nothing

of the great cellular atypism that can occur in non-neoplastic lesions; and one wonders if they are aware that many a regenerative hyperplasia shows much more "malignant" cells (judged by the criteria accepted in this book) than many a carcinoma. Very probably there is room for improvement in the work of some pathologists in their identification of tumour cells in fluids, but this will be achieved only by those with a sound knowledge of histopathology, both of cancer and non-cancer tissues. Purely "cytologic diagnosis" will always suffer from a high proportion of either doubt or error.

RUPERT A. WILLIS.

TELLING THE DIABETIC

Helpful Hints to the Diabetic. By W. S. Collens, B.S., M.D., and L. C. Boas, A.B., M.D. (Pp. 135; 64 figs. 21s. 6d.) Oxford: Blackwell Scientific Publications. 1949.

This is one of those books which invite the patient to co-operate in the treatment of his disease. The nature, symptoms, and principles of treatment are discussed in terms presumably intended to enlighten the sufferer, although it is questionable whether such phrases as "Diabetes is a disease in which the normal process of the utilization of glucose by the cell is impaired because of a disturbance in the function of insulin" would mean much to the ordinary diabetic out-patient. The authors' prose style is based on the principle of avoiding a word of two syllables when one of three is available; thus glucose is never used, but always "utilized"; food is not eaten, but "ingested"; the diabetic does not crave for sugar, but has "an abnormal desire for unusual quantities of sweet and starchy foods."

Food tables are designed for the American larder and are of little help to the diabetic in this country. More than ten pages are devoted to an exposure of the "cures" for diabetes which adorn the advertisement columns of American newspapers, a topic of little interest to the English diabetic. Although the chapters on administration of insulin and urine testing are clear, readable, and excellently illustrated, this book cannot be recommended to diabetic patients in Britain, who are already well served by native authors.

R. BODLEY SCOTT.

INDUSTRIAL TOXICOLOGY

The Chemistry of Industrial Toxicology. By Hervey B. Elkins. (Pp. 406. £2 4s.) New York: John Wiley and Sons. London: Chapman and Hall. 1950.

The author says that this book is an attempt "to treat industrial poisons primarily from the point of view of the chemist and engineer." Any industrial medical officer experienced in the chemical and related industries will know the nature of the problem which he should face but which, not infrequently, he gives up. It is that *he* should learn a great deal of industrial chemistry and that the *chemist and chemical engineer* should be induced to understand the nature of industrial poisonings, acute and chronic, and the way in which co-operation with the medical department can assure good health and happy, productive work. The points of view of doctor and technologist will never be identical, but much can be done to bring them together to the benefit of the worker. For this the doctor must shed his pomposity and his mystery-man state of mind, and the technologist must climb down from his pinnacle of electron shells and thermodynamics.

The author of this book has taken a rather different attitude towards what is needed by the chemist and engineer, for he has given them much useful information on sampling and analytical methods, a valuable chapter on maximum allowable concentrations, and over 180 pages of, in the main, short paragraphs on a large number of elements and compounds of industrial significance. Most paragraphs are preceded by some physical data and a note on harmful effects, as, for example, "Damage to lungs, eyes, skin." Physiology is discussed in two chapters. The references to the literature will probably be more useful than the text.

The dilemma before the author in writing a book of this kind is not underrated, nor is the notable effort made. Perhaps a book on this subject suitable for technologists cannot be written by a single individual. But, if written, it must be much more graphic in precisely the field which the present author says is not his business. Except in the section on analytical methods there is no chemistry in this book, unless giving the empirical formula of a compound is called chemistry; except in the most summary and rudimentary way there is no toxicology. The book is expensive for what it offers. It certainly is not suitable for continuous reading and is hardly authoritative enough for a reference book. But it deserves a place in the chemical factory or laboratory for its collections of useful quantitative data.

M. W. GOLDBLATT.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

British Surgical Practice. Edited by Sir Ernest Rock Carling, F.R.C.S., F.R.C.P., and Sir James Paterson Ross, K.C.V.O., M.S., F.R.C.S. Vol. 8. (Pp. 597. 60s.) London: Butterworth. 1950.

Humanism, History, and Natural Science in Medicine. By F. M. R. Walshe, M.D., D.Sc., F.R.S. The Linacre Lecture, 1950. (Pp. 29. 1s. 6d.) Edinburgh: E. and S. Livingstone. 1950.

A Text-Book of X-Ray Diagnosis. Edited by S. Cochrane Shanks, M.D., F.R.C.P., F.F.R., and P. Kerley, M.D., F.R.C.P., F.F.R., D.M.R.E. Vol. 3. 2nd ed. (Pp. 830. 70s.) London: H. K. Lewis. 1950.

The Biochemistry of the Nucleic Acids. By J. N. Davidson, D.Sc., M.D. (Pp. 163. 7s. 6d.) London: Methuen. 1950.

Science News 17. Edited by J. L. Crammer. (Pp. 156. 1s. 6d.) Harmondsworth: Penguin Books. 1950.

Manual of Zen Buddhism. By D. T. Suzuki, D.Litt. (Pp. 192. 15s.) London: Rider. 1950.

Practical Histology Class Notes. By H. S. D. Garven, B.Sc., M.D., F.R.S.Ed. Parts I and II. (Pp. 220. 20s.) Glasgow: John Smith. 1950.

Facial Paralysis. By J. Parkes Findlay, M.B., Ch.M. (Pp. 47. 17s. 6d.) Sydney: Distributed by Angus and Robertson, Ltd., 89, Castlereagh Street, Sydney, Australia. 1950.

Tumours of the Peripheral Nervous System. By A. P. Stout, M.D. Section II, Fascicle 6, of *Atlas of Tumour Pathology.* (Pp. 57. 60 cents.) Washington, 25, D.C.: Armed Forces Institute of Pathology. 1950.

Primer Congreso Mexicano de Ginecologia y Obstetricia: Official Proceedings. (Pp. 833. No price.) Mexico: Asociacion Mexicana de Ginecologia y Obstetricia. 1949.

Medizinische Psychologie. By E. Kretschmer, Ph.D. 10th ed. (Pp. 304. M. 24.) Stuttgart: Georg Thieme. 1950.

Das Strichbild. By R. Pophal. (Pp. 60. M. 6.60.) Stuttgart: Georg Thieme. 1950.

Erythroblastosis Foetalis und Blutaustausch. By A. S. Wiener and I. B. Wexler. (Pp. 56. M. 4.20.) Stuttgart: Georg Thieme. 1950.

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WOMEN IN MEDICINE

Whether or not one holds with Sir Robert Hutchison[1] that women in men's schools are a disturbing element, the fact must be faced that all the London medical schools, for better or for worse, are now co-educational. The medical schools this week are beginning their new year and are celebrating the event by dining and speech-making. One such speech, by a woman to a woman's medical school, we print elsewhere in this issue. Professor Lillian Penson, who is Vice-Chancellor of London University, usefully reminds her audience that they are part of a university—an idea students who live in the sprawling mass that is London may from time to time forget.

When the Goodenough Committee[2] reported in May, 1944, it drew attention to the difficulties besetting women undergraduates who wished to study medicine in London. While in the rest of Britain medical co-education had for many years been a familiar feature, in London at the time of its report nine out of the fifteen medical schools of London University admitted men students only. At the same time entry to one school—the London School of Medicine for Women, now the Royal Free Hospital Medical School—was limited to women. The Goodenough Committee considered that "in the interests of the public and of the medical profession . . . co-education should become the normal practice in every medical school." And, furthermore, the committee added that the number of women students in any one school should be a "reasonable proportion" of the whole, reason dictating that this should be one woman to every four men. At almost the same time the Senate of London University said that its policy was to open all the London medical schools to men and women on terms of equal opportunity. The matter was clinched when the University Grants Committee said to the medical schools in effect, "No co-education, no grant." By 1947 all the medical schools of London University were co-educational.

As Table I at page 833 shows, in Britain the proportion of women medical students to men in 1938–9 was 1:5.7. The provincial, Scottish, and Welsh universities, which between them accounted for 1,275 out of the 1,930 women medical students in Great Britain, showed the "reasonable" proportion of one woman to four men. In the schools of London University no fewer than 357 of the 551 women medical students were segregated in the London School of Medicine for Women, the remaining 194 being dispersed in King's College (24), King's College Hospital (50), Queen Mary College (4), University College (59), and University College Hospital (57). There were also 38 women undergraduates at the West London Hospital for Women. Taking the figures for London as a whole, there was one woman to every eight men medical students. In the Scottish extra-mural schools (the Anderson College of Medicine and St. Mungo's College, Glasgow, and the School of Medicine of the Royal Colleges, Edinburgh), there was one woman to every nineteen men. But these schools were exceptional, as in 1938–9 over 40% of the Scottish extra-mural students were from foreign countries.

By 1948–9 the total number of women medical students in Britain had risen by 1,001 (2,931 as against 1,930 in 1938–9), while the number of men students had fallen by 756 (10,281 as against 11,037). By that year the proportion of women students to men had risen to 1 : 3.5. This represents an increase of 50% over the figure for 1938–9 (1 : 5.7). In Scotland, Wales, and the provinces there was very nearly one woman student to every three men, while in London the proportion of women (18.9%) was close to the 1 : 4 proposed by the Goodenough Committee. On the debit side of the balance it must be recorded that the West London Hospital for Women, which in 1948–9 had 68 women, has now ceased to recruit undergraduate students, and will in future restrict itself to postgraduate teaching.

If we look more closely at the situation in London, we see from Table II at page 833 that the schools which were co-educational before the war have continued to train about the same proportion of women students. King's College and King's College Hospital taken together averaged 1 : 5.7 in 1948–9; University College and University College Hospital show a slightly higher proportion of women, 1 : 4.7; at Queen Mary College, the figure is a little less, 1:9. But it is the nine naughty schools which formerly were the stronghold of the male that arouse most interest. None of them has yet attained the "reasonable proportion" suggested by the Goodenough Committee. St. Bartholomew's, Charing Cross, and St. George's Hospitals come nearest with one woman to every seven men. Those lagging behind in gallantry are Guy's, the London, and Westminster, where the proportion is less than 1 : 19. Intermediate, with a slightly higher proportion of women than this latter group, are the Middlesex, St. Mary's, and St. Thomas's Hospitals. When the Royal Free Hospital is included, the total proportion of women medical students at London University in 1948–9 falls only just short of the 1:4 recommended in the Goodenough Report. If each school had its

[1] Hutchison Sir Robert, *British Medical Journal*, 1941. 2. 623.
[2] *Report of the Interdepartmental Committee on Medical Schools*, H.M.S.O., 1944.

reasonable proportion of women there would then be 479 more women medical students in London than at present. Unless extra facilities were provided, this would mean so many fewer places for men—a reflection which may make one question the wisdom of trying to spread the load too widely. At a time when so many students are clamouring at the gates of the medical schools, feminists should take note of the fact that at the Royal Free Hospital, also co-educational, there was last year the very unreasonable proportion of only 1 man to every 93 women medical students.

THE TREATMENT OF RABIES

Having eradicated rabies 50 years ago, we in this country are apt to forget that it still exists in most other parts of the world. No continent is exempt, and even in the United States there are still some 50 human cases annually, as well as many thousands of affected animals. The treatment of the presumably infected human being is thus an ever-present problem throughout the world, as of course is the control of the disease in animals. It was therefore natural that the World Health Organization, at its Second Assembly, should have decided to convene an expert committee on rabies. This committee, which included three representatives from the U.S.A. and one each from England, France, India, and Persia, met in Geneva in April last, and the report[1] of this meeting has now been circulated. It serves as a reminder that much progress has been made in methods of immunization, the general application of which should have valuable results.

Many of the recommendations of the committee are concerned with the method of preparation of the vaccine for the immunization of human beings or dogs. Desiccation, as in the original Pasteurian method, or treatment with phenol has generally been used up to the present as a means of inactivating the virus. There is now strong evidence that a more potent vaccine can be secured when inactivation is carried out by exposure to ultra-violet light. A good account of this method is given by Habel,[2] of the U.S. Public Health Service, himself a member of the committee. Infected brains are emulsified in buffered salt solution by means of a Waring blender and exposed to light from a special lamp in a thin-walled rotating quartz tube. The time required for inactivating rabies virus varies from 0.34 to 0.72 seconds, even though the suspension be as concentrated as 20%—a proof not only of the efficiency of irradiation but of the extraordinary capacity of the Waring blender, now an indispensable laboratory tool for many purposes, to reduce tissues to particles of little more than nuclear size. Habel found the degree of protection afforded by vaccine prepared in this way to be much greater than that conferred by a phenolized vaccine. It is of course very desirable that the immunizing potency of any vaccine used should be ascertained by a standard method, and the method of test described by Habel and Wright[3] forms the subject of another recommendation by the committee. It consists in administering six intraperitoneal doses of vaccine to mice at two-day intervals, followed by intracerebral inoculation with fixed virus, of which test animals receive larger doses than the controls. Owing to variations in the properties of virus used for this purpose in different laboratories, it is proposed to make available a standard challenge virus for use in these tests. The type of vaccine advocated for the prophylactic immunization of dogs is that prepared by cultivation of the Flury strain of virus in eggs, as described by Koprowski and Black.[4] A potency test for this vaccine, carried out in guinea-pigs, is also prescribed.

The most serious drawback of vaccine treatment for rabies in man has been the occasional occurrence of paralysis, due to a demyelinating lesion in the cord. This has always been regarded as a peculiar reaction to some constituent of nervous tissue in the vaccine rather than as an effect of the virus, and therefore there has always been a possibility that this unknown factor could be identified or at least eliminated. Progress in this direction has been made, though the committee considers that further study is called for. It is now said to be possible to detect the paralysis-producing factor by inoculating guinea-pigs with a mixture containing the brain suspension and a suspension of mycobacteria in mineral oil. Furthermore, Bell, Wright, and Habel[5] claim to have removed the factor from a brain suspension previously extracted and inactivated with benzene by the addition of calcium acetate; the washed deposit then constitutes the vaccine, the factor having remained in solution. As the report observes, this danger could also be eliminated by using egg-cultivated virus in place of brain suspensions for preparing vaccines for human use, if this should prove feasible.

Another section of the report discusses the use of immune serum, with or without vaccine, for the treatment of presumably infected persons. On theoretical grounds this should be very effective if given at a sufficiently early stage, but the evidence of its value is conflicting and unsatisfactory. Habel[6] has reviewed this evidence and reported studies of his own of the preparation of immune serum in rabbits, its concentration, and its protective effect in guinea-pigs, mice, and monkeys

[1] The report will be printed as an official document of the W.H.O. Technical Report Series. Copies may be obtained from the World Health Organization, Sales Section, Palais des Nations, Geneva, Switzerland.
[2] *Publ. Hlth Rep., Wash.*, 1947, **62**, 791.
[3] Ibid., 1948, **63**, 44.
[4] *J. Immunol.*, 1950, **64**, 185.
[5] *Proc. Soc. exp. Biol., N.Y.*, 1949, **70**, 457.
[6] *Publ. Hlth Rep., Wash.*, 1945, **60**, 545.
[7] *Amer. J. Med.*, 1950, **8**, 412.

when administered after their inoculation with street or fixed virus. It is clear from his results that the degree of protection afforded by serum is greater than that by vaccine, the best results being obtained with the two combined. It has to be remembered in this connexion that post-infection treatment of small animals with vaccine is never very successful, the incubation period being short compared with that in man. Koprowski, van der Scheer, and Black[7] have recently made still stronger claims. The material used was the γ globulin from the serum of rabbits or sheep immunized with vaccine made from the egg-adapted Flury strain and from rabbit-brain fixed virus. This serum neutralized large multiples of a lethal dose of virus when mixtures were injected intracerebrally in mice, and protected the majority of guinea-pigs and hamsters when given 24 hours after bilateral intramasseteric inoculation with street virus. Animals so inoculated and treated with vaccine all died. The serum has also been successfully used in 20 human subjects with either laboratory or street infections, some of a very dangerous nature. The authors made assays of the protective titre of the serum of some of these individuals, with interesting results. In those given vaccine only the titre never exceeded 1 in 6 and was often less than 1 in 2. In one subject given serum as well as vaccine it was 1 in 50 on the day after the serum was given, and 1 in 65, 70, and 55 after 3, 7, and 30 days respectively. This single piece of evidence strongly suggests that such serum gives a high degree of initial protection, which can be maintained by subsequent doses of vaccine. An immediately practical recommendation in the report is that a trial of immune serum should be made in Persia, where rabid wolf-bites, often involving the face, have a mortality exceeding 30% despite treatment with phenolized vaccine. There were 60 such cases last year, and there have been 22 during the first four months of 1950. The report includes a map of Persia showing the air and road routes by which it is hoped that serum may be dispatched to the aid of patients. It is laid down that serum must be given within three days, and that it is not to be used for infiltration of the area of the bite. Alternate cases are also to be given vaccine. Samples of the vaccine used and specimens of serum obtained at different stages of immunization are to be sent to Dr. Habel by air mail for tests of potency and of neutralizing power. If this trial proves feasible its results should be of great interest. The form of the disease is evidently as severe as any known, and the mortality is such that more effective treatment should declare itself unequivocally.

The committee also considered other aspects of diagnosis, treatment, and control. It recommends the intracerebral inoculation of mice or hamsters for confirming the presence of the virus in animal material, and redefines precisely the indications for antirabic treatment. Methods of control in animals are discussed at length; it is suggested that a field demonstration of the use of egg-culture vaccine in dogs should be undertaken in a country where canine rabies is endemic. In view of the recent recognition of the infection in various wild animals other than canines the committee considered that further oecological studies were necessary and also further studies by recently developed methods of the properties of different strains of virus. It is proposed that the committee should meet again next year, and an international conference on rabies is also projected, but is unlikely to take place before 1953.

PREVENTIVE PAEDIATRICS

When a public highway has been in use for a long time it wears into deepening tracks as well as potholes. The authorities may say, rather peevishly, that they are constantly doing repairs, but they ignore the fact that even the best roads need reconstruction from time to time. So it is with other public services, such as infant welfare and school medicine. They have a fine record of progress soundly buttressed by statistics showing a remarkable improvement in child health. Yet Professor Alan Moncrieff has had the courage to challenge them in their strength and to suggest radical changes. In his Dawson Williams Prize Lecture, which is published in the opening pages of this issue, he first discusses the work of infant-welfare centres, applying the test of preventive paediatrics to the diseases and disorders of children. In this respect he feels that the service has somehow failed to provide opportunities for advances in knowledge. The most valuable recent advances in the management of breast-feeding, for example, have come from outside, and the more practical applications of immunization and the trial of the newer antibiotics have been accepted with the reluctance which so often accompanies a too tidy administration. One of the obvious difficulties of criticism is that the infant-welfare services vary enormously from area to area. It is perhaps hardly fair to cite a comment of a prominent M.O.H. as evidence that the service is disloyal to breast-feeding. What is clear, however, is that there are serious gaps in the scheme, especially in its contribution to the early weeks of infant life. There are many lessons yet to be learned about the care of the newborn, and better co-operation is needed between the infant-welfare service, the hospitals, and general practitioners. Professor Moncrieff quotes a comment of the Royal Commission on

[1] *Solving School Health Problems*, 1942, Commonwealth Fund and Humphrey Milford.

Population that "a serious defect in the maternity services is that women are often discharged from hospital on the ninth or tenth day, before they have been taught to handle their babies." This criticism is too frequently true, but the remedy that the health visitor should be on the doorstep to greet the mother on her arrival home surely falls short of the target: the careful training of every expectant mother should begin at the infant-welfare centre long before her first baby arrives. This is the practice of progressive centres, where demonstrations of the everyday duties of motherhood are carried out by health visitors and voluntary workers. Nevertheless, there is a great waste of a health visitor's time in routine work which could easily be done by lay helpers.

On the clinical side Moncrieff is undoubtedly on strong ground when he pleads that the paediatric service in maternity hospitals should provide continuous supervision from birth through infancy. By this means more could be learned about the origins and progress of the common infections of childhood, and also of the so-called defects such as adenoids. The significance of tuberculosis in the early years of life has been slurred over, and it is time for the infant-welfare movement to take up an aggressive attitude. As Moncrieff says, "Surely the early detection of tuberculous infection, the tracking of contacts, the use of B.C.G. vaccine for negative reactors amongst them, could be made a fine co-operative effort between the infant welfare and tuberculosis branches of the health service." There are many other fields, some hardly cultivated at all, in which the welfare centre could help —the promotion of mental health through parent education; an approach by similar methods to sex teaching; and intelligent instruction on the prevention of accidents in the home. Recent studies on infant morbidity indicate a need for the more prompt and efficient care of minor maladies, and of serious illness before it becomes serious. Who is to carry out this treatment? Surely it must be the family doctor in the family home. Moncrieff goes on to say that the medical officers of the infant-welfare centre should logically be the family doctors who will be carrying out the work in the homes. Hitherto, this sensible view has been limited by the element of time and the barrier of competition. The family doctor, working more or less by himself, has in fact found it difficult to arrive at an infant-welfare centre at the scheduled time. Lateness and irregularity of attendance are fatal to the work of a centre. Again, general practitioners have found it embarrassing at infant-welfare centres to treat, or even to examine, the children of other practitioners' patients. Moncrieff says wisely that the health visitor of the future should not be made into a subsidiary social worker: she should in fact receive more training than at present in the nursing of children. In addition, she ought to be trained in educational methods. The family doctor may not have much opportunity to become proficient in this vital subject, yet health education must remain within the province of doctor and nurse because of its ever-changing medical background. It might be reasonable to suggest that the educational work of infant-welfare centres should be undertaken by health visitors and supervised by the medical officer of health and his staff.

The essential structure of the school health service has changed little during the past generation or so, although of course many advances in clinical medicine have been adopted. The most notable progress has been made in the ascertainment and care of handicapped children. A reconstruction of this service is overdue. Nyswander's[1] careful study in the United States exposes the principal weakness of our own system, for she showed that a trained teacher working in harmony with a nurse can detect with great accuracy those school-children who ought to be seen by the physician. If they err, as they will do, on the safe side, no harm is done. The results are wholly beneficial: each child with a suspected defect is examined at leisure by a physician trained in child health instead of being subjected to a dreary routine of superficial inspection. The entire screening system is strengthened, with economy in both man-power and money. The responsibility thrown upon teacher and nurse is a stimulus rather than a burden to them, and it tends to improve co-operation. The school physician on his part is given time for careful, interesting clinical work and opportunity to observe the progress of all the children who suffer from a mental or physical handicap. Most important of all, the parents appreciate the value of thorough examination and gain confidence in the service as a whole. The physician, escaping thus happily from a wilderness of routine inspections, can devote more time to the broader aspects of preventive medicine in his school work.

Moncrieff justly stresses health education, a subject in which every school health officer should be trained, and he urges the importance of bringing him into the teaching programme, both in hygiene and in physical education. There are still many areas in which the school health staff is not consulted on the teaching of hygiene, on sex education, or even on physical training; and there are education authorities which do not give him a voice in the planning of ventilation, lavatories, rooms for drying and changing, and other essential health equipment in schools. This is patently wrong and ought to be remedied without delay. It is no answer to say that some authorities have already adopted the reconstruction which Moncrieff recommends. The time has come for it to be generally accepted.

DRUG ACTION AND SUGGESTION

The clinical trial of a drug may, for obvious reasons, bear little relationship to its effect upon an isolated organ suspended in a standard solution. Clinically the action of the drug can be profoundly modified by numerous factors arising from the vagaries of the intact patient, while in laboratory experiments the effect depends only on the pharmacological action of the drug itself. Those who have attempted to obtain basal conditions for such a clinical test as the B.M.R. will appreciate the difficulties involved, particularly the difficulty of obtaining a basal mental state. Wolf[1] has recently demonstrated the effect of psychological influences on the pharmacological action of drugs in a series of experiments mostly carried out on Tom—his famous modern Alexis St. Martin—who has a large gastric fistula. Wolf has been able to correlate changes in the colour and turgidity of Tom's gastric mucous membrane with measurements of secretion and motility, and he found that the factors apparently of importance in experiments with drugs were the state of the end-organ when the drug was given; the setting in which the drug was employed, including the mode of administration and the effects of suggestion, implicit or expressed; and previously established habits of reaction. Thus urogastrone administered at a time when Tom's stomach was in a normal state usually induced an inhibition of secretion associated with pallor of the mucous membrane. If, on the other hand, it was given when his stomach was turgid and actively secreting, due to a period of frustration, gastric hyperfunction was actually somewhat enhanced rather than inhibited. Further, resentment caused by a hypodermic injection of distilled water greatly increased gastric hyperaemia and secretion. The introduction of 10 ml. of the syrup of ipecacuanha through a Levine tube into the stomachs of two female subjects constantly caused nausea and vomiting, the effect being shown objectively by the characteristic cessation of gastric contractions in kymographic recordings. When, however, a second dose was introduced through the tube, this time with the reassurance that the symptoms would be abolished by it, the nausea subsided and gastric contractions recurred. Doubtless this mechanism operates in any enthusiastic therapeutic regime and is the stock-in-trade of faith healers. In the last of the experiments Tom was conditioned to the administration of neostigmine, to which he invariably reacted with the usual abdominal cramps and diarrhoea and with gastric hyperaemia, hypersecretion, and hypermotility. But when, unknown to him, tap-water, lactose, and even atropine (a direct antagonist to neostigmine) were substituted, identical effects were obtained.

Such experiences confirm what is well known but sometimes forgotten, that the human body reacts not only to physical and chemical stimulation but also to the symbolic stimuli of words and events which have acquired a special significance for the individual. Not only the frequency but the magnitude of the "placebo effects" reported in these experiments was impressive, and they should certainly be taken into account in pharmacological experiments in man and even in the intact animal. Elsewhere in this issue Drs. C. E. Quin, R. M. Mason, and J. Knowelden discuss the difficulty of assessing improvement during the drug treatment of rheumatoid arthritis. When investigating the value of deoxycortone and ascorbic acid injections they found that subjective improvement occurred to an equal extent after both test and control injections, and that when objective tests were used the results obtained with the test substance and the control injections were the same. It is customary to control the clinical trial of drugs with inert placebos when the data to be evaluated are subjective, but when they are objective placebo control is usually omitted. The need for such control is suggested by the fact that placebo effects may be potent enough to cause not only objective changes at the end-organ resembling those attributable to potent pharmacological action but even reversal of the expected action. Thus the familiar difficulty of evaluating the effect of new drugs on patients arises not only from uncritical therapeutic enthusiasm but also from the actual pharmacological effects of "placebo action."

[1] *J. clin. Invest.*, 1950, **29**, 100.

HEXAMETHONIUM

If methyl groups are substituted for hydrogen in the ammonium radical, and if two of the trimethylammonium groups so formed are joined by a chain of six $-CH_2-$ groups, the result is hexamethonium. This was examined in the first place as a substance which might have the properties of D-tubocurarine, but was found by Paton and Zaimis[1] to be much inferior in this respect to decamethonium, which is now commonly used in anaesthesia as a curarizing agent. Hexamethonium was indeed first introduced as an antidote to decamethonium. It has, however, a certain curarizing action which is much more evident at the sympathetic ganglion than at the motor end-plate in skeletal muscle. The transmission of the nerve impulse from the motor nerve to the motor end-plate and likewise the transmission from a preganglionic fibre to a postganglionic fibre in the autonomic system are both believed to be effected through the liberation of acetylcholine, and a curare-like substance which blocks the first transmission should also block the second. D-Tubocurarine is more active at the motor end-plate, while hexamethonium is much more effective at the autonomic ganglion, though both have some action at both sites of transmission. The reports published in this issue by Drs. A. Campbell and E. Robertson on the treatment of hypertension and by Drs. A. W. Kay and A. N. Smith on the effect of hexamethonium on gastric secretion are both based on the property which hexamethonium possesses to block transmission at the autonomic ganglia. The effect on hypertension is due to block in the sympathetic autonomic ganglia, and that on gastric secretion to block in the cranio-sacral autonomic ganglia, if we use Langley's term—that is to say, in the vagal ganglia, which are supposed to exist in the stomach wall.

The sympathetic ganglion is a point in the efferent sympathetic pathway which corresponds to the junction between the upper motor neurone and the lower motor neurone running to skeletal muscle. A block at the sympathetic ganglia interrupts the stream of motor impulses, causing vasoconstriction. Campbell and Robertson have found that daily administration of hexamethonium for a period from one to five weeks brings down the blood pressure and that it remains down when the drug is discontinued. This is a remarkable and hopeful result. The cause of the hyper-

[1] *Brit. J. Pharmacol.*, 1949, **4**, 381.

tension is either excessive tone in the arteries or an excess of constrictor impulses from the sympathetic centres. While it is clear that the blood pressure will fall when constrictor impulses are excluded, whatever the cause of the hypertension, it is not clear why the blood pressure does not rise again when the block is removed. Failure to do so suggests that the hypertension is due to some vicious circle, and once this is broken the hypertension disappears.

The action of hexamethonium in diminishing gastric secretion is due to block of the secretory impulses coming down the vagus nerves. Kay and Smith found that when the drug was given by mouth its effect varied in different patients: five out of ten had achlorhydria, three had diminished secretion, while in two there was no effect. They also found that the iodide and bromide salts were more active than the chloride, though it is difficult to see what can be the reason for this. The side-effects do not appear to have been serious in either investigation: when postural hypotension occurred it could be overcome by activity.

AN ACCIDENT IN THE X-RAY ROOM

All who work in radiological departments are well aware of the danger of accidents occurring to those who misuse electrical apparatus, and stringent precautions are taken to guard against disaster. The report appearing on another page by Dr. Geoffrey Dean illustrates a different danger—that is, the accidental administration of a barium compound other than the harmless insoluble barium sulphate for outlining the alimentary tract. Seven patients received a dose of barium carbonate much in excess of doses that had proved fatal in earlier recorded cases. Fortunately only one case was fatal. This patient had less barium than the other six, but was given an anaesthetic soon after: the effect was to prevent the vomiting and diarrhoea which, Dr. Dean believes, were responsible for hastening the excretion of the barium and so saving the lives of the others. The symptoms were similar in all the patients, with the classical signs of salivation, abdominal cramps, vomiting, and purgation. At the beginning of their illness a number of patients noted a peculiar stiffness of the face and blurred or double vision: these symptoms are not described in the standard textbooks and are worth bearing in mind. Early diagnosis in such cases is of special importance, because there is an effective antidote in magnesium or sodium sulphate. Magnesium sulphate was given for another purpose to one of Dr. Dean's patients immediately after the barium, and he escaped all the worst symptoms. The poison had no action on the central nervous system, and, apart from the intestinal disturbances, progressive muscular weakness was the main feature. This is in agreement with the pharmacologists' views on the action of barium—that it affects the muscle fibres rather than the nervous system. Many textbooks mention that convulsions occur in barium poisoning, though one older authority[1] emphasizes that muscular weakness and paralysis rather than contractures dominate the picture of barium poisoning in man.

This accident occurred because the wholesale chemist had put barium carbonate into containers labelled barium sulphate. We are all inclined to accept without question that the statement on any label does in fact correctly record the nature of the contents of the container. Some years ago Keall and his colleagues[2] described three cases of tellurium poisoning with two fatalities among patients given the contents of a bottle labelled "sodium iodide" for retrograde pyelography. The solution was in fact 12½% sodium tellurite, but the authors gave no details about how the mistake was made. There are, of course, many ways in which the wrong contents or the wrong slip of paper might find their way into or on to a container. Some organizations are well aware of this and have established expensive but effective checks to ensure that none but correctly labelled materials leave their premises. If hospitals decide to deal only with such firms they should be prepared to pay the slightly greater cost as the price of safety.

[1] Schmiedeberg, O., *Pharmakologie*, 1902, Leipzig.
[2] *Brit. J. industr. Med.*, 1944, **3**, 175.

VICTORY MEDAL FOR DIABETES

Dr. Elliott P. Joslin, who celebrated his 81st birthday last June, is known throughout the world as a distinguished veteran in the fight against diabetes. Just over two years ago, as part of his effort to educate diabetic patients in healthy living and to show them what proper care can do, he founded a Victory Medal to be presented to any person who is still free of all vascular disease after a quarter-century or more with proved diabetes. In the 24 months up to June 1, 1950, he had found 20 patients who passed this test, and last year[1] he personally handed one medal to Dr. R. D. Lawrence, who for 20 years has led an active professional life as a consultant in diabetes and is said to have been one of the first people in Britain to receive insulin.

On behalf of the Advisory Committee of the Diabetes Fund of the Boston Safe Deposit and Trust Company, which holds and administers the Medal fund, Dr. Howard F. Root has now invited (see p. 840) the Editor of the *British Medical Journal* to award a bronze Victory Medal in Britain. This gift has been accepted with warm appreciation as a generous gesture of good will from our American colleagues, and the medal is now in the office of the *Journal*. It is hoped to set up a small informal committee to decide how best to award it. The medal, illustrated in Dr. Root's letter, has been designed by Amelia Peabody. It measures 2 inches across, and on the reverse side appear these words: "For life and health through perseverance and scientific medicine."

On October 12, the first degree day of the Michaelmas Term at Oxford, the Osler Memorial Medal will be presented to Sir Ernest Laurence Kennaway, F.R.S., who is an honorary Fellow of New College. The award was instituted in 1925 as a memorial to Sir William Osler, Regius Professor of Medicine at Oxford from 1904 to 1919. The medal is given to the Oxford medical graduate who has made the most valuable contribution to the science, art, or literature of medicine and who has not previously held the award. It is given once every five years only. Sir Ernest Kennaway, who is Professor Emeritus of Experimental Pathology in the University of London, has devoted a large part of his career to cancer research in this country and in the U.S.A.

[1] See *British Medical Journal*, 1949, **1**, 1090.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

THE CARDIOGRAM IN CLINICAL DIAGNOSIS AND PROGNOSIS

I. THEORETICAL CONSIDERATIONS

BY

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When the muscle fibres of the heart pass from the resting to the active phase of systolic contraction electrical changes take place. These can be recorded by a suitable instrument. Several types have been used. The string galvanometer makes a photographic record of the greatly magnified movements of an almost invisible fibre. The currents from the heart may be intensified by thermionic valves to work a mirror galvanometer which writes on sensitive paper with a beam of light. The cathode-ray oscillograph may illuminate a fluorescent screen; direct records may be made on special paper by heated points, or traced with ink. The result of all these methods is the cardiogram.

I will consider for a moment the unit—the muscle cell. At rest it is polarized, with a negative charge of anions lining its semi-permeable membrane on the inside, balanced against a positive charge of kations on the outside. When the "stimulus" for action reaches this cell it becomes depolarized, the ions change position, and the cell achieves its one purpose in life—contraction. The process of depolarization is associated with a difference of electrical potential at the ends of the cell, and current flows. Contraction over, repolarization sets in, starting where depolarization began, and again there is a difference of electrical potential and a flow of current, but opposite in sense to that of depolarization. Polarization being complete, current ceases to flow, and there is diastolic rest until the next phase of systolic activity. Any type of electrocardiograph will record these currents.

What has been instanced above must be multiplied untold times when we attempt to conceive the total systolic activity of the syncytium of cells which compose the whole heart muscle. One must remember, too, that the impulse for action passes throughout this mass during a definite interval of time, and that, so far as the auricles are concerned, these impulses are merely simple transmissions through the muscle sheet. But in the ventricles there is a special telegraph apparatus—the Purkinje system—which distributes the impulse as rapidly as possible through these chambers, which are indeed muscular cups. It must also be remembered that the general distribution of the spread of the impulse, considered in three dimensions, is opposite on the two sides, right and left.

Normal Cardiogram: Nomenclature

The apparatus is so arranged that a positive potential will produce a deflection from the base-line (which is spoken of as isoelectric) in an upward direction; a negative potential will give a downward deflection. Hence the direction of deflections is usually spoken of as positive or negative (or upward or downward). It is a fundamental fact that so long as an impulse is travelling towards a recording electrode the potential of that electrode is positive. Similarly when an impulse is receding from an electrode its potential is negative (Fig. 1).

Standardization.—It is now the universal practice to standardize the deflections so that a difference of potential of one millivolt causes a movement of one centimetre.

Auricular Activity.—The electrical potentials developed by auricular systole cause a small deflection, which is always labelled P. As a rule it is positive in standard Leads I and II. It may be negative in standard Lead III. It is shown best by standard Lead II, VR, VF, and V_1. (See below for the explanation of these terms.)

Ventricular Activity.—The impulse reaches the ventricles after a short interval occupied by its passage through the conducting tissues. The first indication of electrical change may be a negative or downward deflection Q. This varies much in size in different leads. Its presence may be physiological merely, or definitely pathological in significance. It is not always seen. It may be followed by a positive deflection R; if Q is wanting this will be the first deflection. It varies much in height for many reasons. After this may come a negative deflection S, again very variable in depth. If the sole deflection recorded be negative there has been some doubt whether it should be called Q or S. It is safest to label it with both letters.

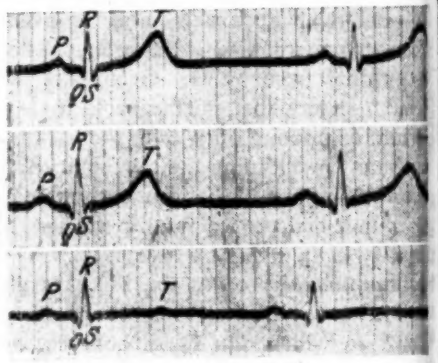

FIG. 1.—Normal electrocardiogram

The QRS complex, as it is called, coincides with the process of activation of the ventricles, or the beginning of ventricular systole. Following this phase, for the instant when all the muscle is in a state of activity, there is no difference of potential anywhere, and the recording curve is at the base-line again. Then that part of the myocardium which first became depolarized starts to become repolarized and for the moment, until repolarization is everywhere complete, there is electrical disequilibrium. This causes a further flow of current through the galvanometer, and a flattened curved wave is recorded which is always labelled T. It is usually positive; in fact, in some leads a negative T can always be regarded as of pathological significance, but in others this is not so. The shape of the wave may be very important and indicate the cause of an abnormal appearance. Sometimes the S–T or RS–T phase is not at the base-line, or isoelectric: it is then said that there is S–T (RS–T) deviation—positive or negative. This may be of great pathological importance in indicating myocardial disease.

It must be remembered that, as in all natural things, the range of the normal cardiogram is wide, and that its limits are by no means clearly defined. Long experience is needed to appreciate these points. The variations in the size and shape of the deflections are considerable, and depend on such causes as the lie of the heart in the chest, the vigour of the heart, the resistance of the skin, and other factors but little understood.

Time Measurements.—All cardiograms show a time scale, usually in 1/5 and 1/25 second. It is convenient to mention here that the interval between the beginning of the wave of auricular systole (P) and the wave of ventricular systole (Q or R) should not normally exceed 0.2 second. The duration of the QRS complex should not normally exceed 0.1 second.

Technique

For many years the standard three bipolar leads from the contacts placed on the arms and the left leg were all that could be offered. Then a fourth lead from the front of the chest in the region of the apex of the heart was added. The potential at the exploring, or precordial, electrode was much higher than that at the distal electrode, which was placed on either the right arm (CR) or left foot (CF), so that the curve was practically derived direct from the region of the heart itself. The next step was to use a variety of precordial contacts, starting with the first position in the fourth intercostal space just to the right of the sternum, the second just to the left of the sternum at the same level, and so on to the sixth in the left mid-axillary line; the fourth position being in the left mid-clavicular line in the fifth interspace. All those were bipolar leads.

The latest development is the introduction of unipolar leads. There are three unipolar limb leads, from the right and left arms and the left leg. It will be appreciated that there is obviously a close relationship between the standard bipolar limb leads and the unipolar limb leads. Lead I records the difference of potential between the right arm and the left arm. The unipolar arm leads record only the electrical potential at each arm.

In the same way standard bipolar limb Lead II records the difference of potential between the right arm and the left leg; and standard bipolar limb Lead III the difference of potential between the left arm and the left leg. The unipolar limb lead from the left leg records only the changes of potential in that limb.

By a similar method unipolar precordial leads have come into use, numbered 1 to 6 (7 and 8 may be added if need be).

The letter V (voltage) has been employed to indicate unipolar contact—VR, VL, VF, for the right and left arms and the left foot, and V_{1-6} for the precordial contacts.

CR and CF were the initials indicating the bipolar precordial (or chest) leads, with the right arm or left foot as the distal electrode, respectively.

This brief survey of the technical side of the nomenclature is needed, partly because the terms may be unfamiliar to many, and also to show that in the past few years a very considerable development in technique has taken place. At present it may be said that the full electrical exploration of the heart requires at least 12 leads, and possibly some six or more at higher levels on the chest. The additional value of oesophageal leads, or of contacts placed on the back of the thorax or on the epigastrium, is still to be assessed. How far the original bipolar limb leads will be retained remains to be seen, and how many of the new ones will be used in the first stages is still uncertain. The introduction of the direct-writing type of cardiograph is a great advantage over the older photographic models; much time can be saved and the use of multiple leads greatly facilitated. It may well be that the simplicity of this technique will enable many or all to be used.

Cardiogram and Position of Heart

The general direction of the spread of the current of activation through the ventricles is downwards and forwards and to the left. Roughly, this is at an angle of about 60 degrees to the horizontal. The direction of this electrical change at any given moment is called the electrical axis.

The lie of the heart in the thorax varies much with a patient's build and with the position of the diaphragm. A person with a long narrow chest will have a vertical heart; a person of stocky build, with wide chest and horizontal rib margins, will have a transversely placed heart. Obesity, pregnancy, and the expiratory phase of respiration will raise the diaphragm and make the heart more transverse. These changes in position alter the appearance of the cardiogram in the standard bipolar limb leads and in the unipolar limb leads.

The expression "left axis deviation" was coined to describe an anticlockwise rotation of the heart's axis in a frontal plane, upwards and to the left. The expression "right axis deviation" describes the opposite, a rotation in a clockwise direction, downwards and to the right. These changes may be caused by the build of the patient or by the phase of respiration. But enlargement of either ventricle also causes them and to a far greater degree than other means. Enlargement of the left ventricle is associated with left axis deviation, enlargement of the right ventricle with right axis deviation. The terms "left and right ventricular preponderance or predominance" were also in vogue to describe these curves.

Cardiogram in Cardiac Enlargement

As many of the features of position and enlargement are closely connected it is convenient to discuss enlargement at this stage, though it is in a sense a myocardial abnormality. The extent to which active hypertrophy of either or both ventricles may produce characteristic curves is very variable. Very often recognizable reliable changes are not seen: on the other hand, if they are present they should be capable of interpretation. In order to find out whether there is hypertrophy of the ventricles one should examine the patient clinically and with the fluoroscopic screen rather than the cardiogram. But there are occasions on which the cardiogram may give useful confirmatory evidence concerning which ventricle is enlarged. This hint is particularly useful in congenital defects.

Considerable increase in size of either ventricle may be present without any modification of the curve; for example, there may be obvious enlargement of the left ventricle from hypertension and yet a normal curve may be obtained. The reason for this is not understood. But once a certain degree of hypertrophy has been reached the characteristic cardiograms are usually seen. In many cases it is possible to gauge the degree of change in the heart by the type of curve. What the causes are, and in what proportion they operate in producing the curves of hypertrophy, is still far from clear. The altered position or lie of the heart in the chest and the increase in the thickness of the ventricular wall are probably the important ones. The most recent trend, due to the use of unipolar leads, is to indicate the position of the heart—horizontal, semi-horizontal, vertical, and so on—and also to refer to any suggestion of hypertrophy.

The right ventricle may influence the change in the curve in the same way as the left; but its relatively smaller normal bulk requires gross increase to produce much effect, so it therefore seems relatively late.

For the most part gross cardiac enlargement is due to valvular disease or hypertension, or congenital defects; less commonly to abnormalities in the pulmonary circulation. The cardiogram will then to some extent help to gauge the degree of deviation from the normal, and so help to assess the gravity of the case. The changes associated with hypertrophy of one or other ventricle give a progressively abnormal type of curve, and so may indicate to which stage the disease has reached.

It must be remembered that in some cases of hypertensive heart disease ischaemic lesions may be present as well. These would increase the gravity of the prognosis. The cardiogram may reveal them.

The cardiogram is quite useless in the early diagnosis of valvular disease, or in the direct diagnosis of valvular disease at all; only indirectly, by indicating ventricular hypertrophy, may the curve suggest that a defect in the function of a particular valve may be the cause of it.

Fig. 1 is reproduced from Scherf and Boyd's *Clinical Electrocardiography* by permission of the authors and Messrs. Heinemann Medical Books, Ltd.

UNIVERSITY VENTURES OLD AND NEW*

BY

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All university education, and indeed all education and all activities of universities, could be brought under my title. For, whatever can be said for or against the educational process, it is a constant series of ventures—often over seas which are unknown and therefore uncharted. Which of them shall I choose?

There is first the venture of doing things for the first time. Some of you may well feel that you have a special claim to inclusion here. It is your first year in the school or your first year of a new and different part of your course. I can assure you, however, that these particular types of venture do not stop here. I claim a special place in this category myself—by asserting that few people so often do strange acts for which they feel at best only partly qualified. I should like to warn you of this in case any of you are thinking of becoming vice-chancellors. The things may be different, but the process remains the same.

But it is of collective rather than individual ventures that I want mainly to speak—appropriately enough to a world where emphasis is growing on the importance of collective action or, if you prefer it, combined operations. The use of the last term will in itself be enough to show that collective action is in the last resort the action of individuals. The antithesis is an unreal one. Somewhere in all collective action there is someone who is making a decision. Frederick the Great once said that he disliked councils because they were always timid. One of the problems of the modern world is to secure that this is not true. Individual responsibility and individual initiative are, when it comes to the point, essential to all organizations, large or small. That cannot need emphasis in a medical school which has, at least in its associated hospitals, so many examples of the individual idiosyncrasies of the members of the human race.

We start, then, with the knowledge that these corporate activities of ours are at heart the activities of individuals. And I am choosing at random. The first I would call the venture of choosing and finding the subjects of academic study. We have been on the whole conservative in this country in our attitude to university education. Some countries have gone further than we have in the direction of including among the courses which could be taken for university degrees a number of forms of training which are training for a particular type of post, and it may well be that there will be further pressure upon us in this country. No one would in fact be prepared to say that subjects should be excluded because they are useful. We are driven to the harder task of defining what we mean in a positive form. What are the characteristics which entitle a subject to be put on the right side of the line? Perhaps the nearest that we can get to it is to say that every subject which should be included contains in it an unlimited possibility of development by research. This on the whole is a good approximation to the truth, for it implies something which I believe to be fundamental to undergraduate study, that what is being studied is something which is constantly changing and which therefore holds out a promise in the future which no undergraduate can hope to reach.

It is true that one of the difficulties of all university education at the present day—and I imagine that this applies to the faculty of medicine just as much as to any other—is that the body of knowledge already obtained is so great that it is necessary to go a very long way before even a glimpse is caught of the knowledge of the future. So far as undergraduates are concerned this situation has obvious drawbacks. We all maintain, those of us who teach in universities, whatever our subjects may be, that we are doing or trying to do something more than impose upon the memories of our students masses of detailed information which indeed is all recorded in numerous textbooks which are available to them. Yet in our candid moments we have all to own that a good memory can carry an undergraduate a very long way.

This brings me to another of the several ventures which are included under my title—the venture which must be of necessity a combined effort on the part of the university teacher and the man or woman who is being taught. This is the venture of seeing beyond the factual information which it is essential to impart or absorb to the as yet unproved or unascertained items of knowledge which lie beyond. It is a venture which requires above all an effort of faith, and I should be prepared to prophesy that a great many of you who are now beginning your university career will find a good many moments, if you take what I have said seriously, when you wonder whether it is anything but moonshine.

If this is a venture of faith and the most constant of all the ventures with which we are concerned, it is nevertheless only one of the many differing things which can be brought under my heading. I should like to refer in the first place to some matters with which I have been concerned.

During the war—and I am not concerned for the moment in dealing with the reason—there was a greatly increased sense of purpose in relation to a totally different aspect of governmental activity: the welfare of colonial peoples. It is difficult to give a date to this development, but roughly speaking it came with the

*Inaugural address at the opening of the 1950-1 session of the Royal Free Hospital School of Medicine, delivered at B.M.A. House on September 29.

middle period of the war, although of course its history could be traced back to the pre-war era. It will be enough for the moment to refer to the decision in 1940 to grant a substantial sum of money by parliamentary action to what is technically described as "Colonial Development and Welfare." One of the results of this policy has been the establishment of a number of new university institutions in the colonial areas. A commission was appointed in August, 1943, to inquire into this matter: "To consider the principles which should guide the promotion of higher education, learning and research and the development of universities in the colonies. . . ."

Ventures Overseas

I was a member of this commission, and shared with a number of other people, therefore (there were sixteen of us in all), the task of making recommendations on this subject. I am glad to say that it was one of the commissions—of which, whatever the general public may think, there are many—which led to some practical results. Roughly speaking it may be said to have led to two main classes of results: to the transformation into universities or university colleges of certain institutions which were already in existence—for example, the colleges in Singapore have since been transformed into the University of Malaya, and two institutions in Africa which were not at the time of university status at all—Makerere College in Uganda and Gordon Memorial College, Khartum—have been transformed into university colleges; that is one group of results. The second is the founding of new university colleges—two of them in West Africa at Ibadan in Nigeria and Accra in the Gold Coast, and the other in the West Indies in Jamaica. I am not going to venture to speak of this last, much as I should like to do so; Professor Lucas Keene knows it well, and has contributed so much of value to it that it would be impertinence to say much in her presence. Nor shall I refer to Nigeria, which I have never visited, while Professor Killick has. All these are ventures which, like all other actions or series of actions that can be included in that term, are acts of very considerable faith on the part of those who carry them out. The institutions which I know best, at Khartum and in Jamaica, belong to the two different categories which I have mentioned; they have a great many other differences as well.

The College of Khartum is essentially a Moslem institution in a predominantly Moslem country. There are no religious tests and there are in fact now a few Christian students. The majority of the staff is Christian, but, as is appropriate in a Moslem country, the outlook of the College is strongly affected by the predominant religion. The weekly holiday is on Friday and not on Sunday. There is not yet a mosque attached to the College, but the new buildings which are envisaged will include one. This affects perhaps the study or teaching in certain faculties, but does not alter materially the fundamental characteristics of university institutions. Another interesting characteristic is the fact that the Anglo-Egyptian Sudan is far more completely a socialist State than the Britain of to-day. The effect of this fact is that practically every occupation which is open to the students of the College is in government service of one kind or another. It is thus more difficult to maintain that university education in the Sudan is something more than training for a particular occupation. Another element in the situation is to a large extent common to all these new institutions. It is the difficulty of making it clear that a university course is something other than the successful passing of appropriate examinations. This difficulty is the greater because in all these regions, where only a very small minority of school-boys or school-girls can possibly hope to reach the stage at which they could enter a university institution, the passing of examinations looms very large in the educational system. At almost every stage of their early education they have to face a competitive examination upon the results of which they keep or lose their place on the educational ladder. By the time, therefore, that a student reaches a university college he has almost inevitably become imbued with the idea that what matters is a successful climbing of the next particular step.

No student in London whose private interests lie in art or in music can legitimately complain if provision is not made at his own particular institution. The opportunities not only in other parts of the university but in London as a whole are so great that his difficulty is rather a matter of choice than anything else. He may well, and of course often does, complain that with all these opportunities he lacks time to take advantage of them, and thus it comes about that, while in these new university ventures overseas the chief need is to provide for something which will interest and stimulate students outside their compulsory curriculum, in our own case the parallel need is rather to see to it that everybody has time to take advantage of some of the many opportunities which at present exist.

There is naturally something exciting in these university ventures in distant countries which is lacking in our own problems. There is something exciting for visitors to these regions simply because the countries themselves are in so many ways different from our own. There is a measure of excitement from the point of view of the peoples themselves. Colleges necessarily live there in a blaze of publicity which is fortunately lacking, for example, in London. To a very large measure the hopes of the peoples for self-government are tied up in the progress of the college: their national pride is involved in its success.

University Education for All

Nevertheless, most of our university activity here could be brought in one form or another under the heading of a venture. This is perhaps particularly true in our own day, since there has been such spectacular development in university education in the past hundred years. Most of the modern universities in England have grown to maturity in that period, and we ourselves in London only celebrated our centenary fourteen years ago, and our older colleges, though some of them are older than the university itself, are for the most part the product of the nineteenth century. What is interesting as we look back upon this historical record is that there were a number of differing influences which went to make the different university institutions and indeed the university itself. If we reflect upon these factors and try to pick out one thing above others which characterizes the movement as a whole, I think it would be the attempt to provide university education of one kind or another for virtually all comers. The absence of restrictions upon first creed—it is difficult to think that only a hundred years ago that was a matter of burning importance—and later on race or sex is one way of bringing out this insistence upon a universal opportunity. We have at the same time to realize that in our age also there are ventures to be faced almost, if not quite, as important as those which were involved in the great university development of the nineteenth century. In almost every respect our outlook on university affairs needs to be adjusted to the new circumstances of our own age. The great ideal for which I have said our own

university stood, the provision of opportunities for university education for all those who by one means or another could achieve it, has a new bearing when so much of university education is achieved not by individual unaided effort but by the grant of support in one form or another by the State. This is one of the main problems facing universities at the present time, and our new venture of the mid-twentieth century is perhaps above all to find a way of reconciling two things—the great tradition to which we are almost without exception devoted, the freedom of universities and, within measure, of students in universities, and the necessity of finding some proper method of determining the proportion of people, and indeed the actual persons, in the population who should be enabled to enter upon a university life. There is no easy answer. It is easy to adopt phrases such as "service to the community" or "the good of the community," or even the older phrase of "equal chances for all," but none of these is satisfactory as a solution of the practical problems with which we are all faced.

It is undoubtedly true in university as in other aspects of life that there is a danger lest the matters which are of concern for the future should be decided almost wholly by people who by the mere passing of time belong largely to the past. I am not, however, so far removed from my own generation as to think that the younger anyone is the better their judgment. There is a great deal to be said for that peculiar, as it seems to us, constitution which is one of the many which were invented by the fertile brains of French revolutionaries which divided the population into the young and the old rather arbitrarily at the age of 40 and gave to the young the duty of formulating ideas and to the "ancients" the duty of criticizing them and the power to prevent any of them from being put into action. It embodied at any rate one fundamental principle, that in all developments which could possibly be brought under the word which I have used in my title it is necessary to blend together the old and the new, and to give some opportunity, however small, to the trying out of new ideas.

MIDDLESEX HOSPITAL MEDICAL SCHOOL

The annual dinner of the Middlesex Hospital Medical School was held at the Savoy Hotel on September 28. Mr. E. W. Riches presided over a record attendance, the number of covers laid being greater even than at the dinners before the second or the first world war. The principal guests included Lord Webb-Johnson, the presidents of the three Royal Colleges, the regius professors of Oxford and Cambridge, the principal of the University of London, the medical directors-general of the Royal Navy and the Royal Air Force, the secretary of the Ministry of Health, the chief administrative officer of the North-west Metropolitan Regional Hospital Board, the mayor of St. Marylebone, and the medical officer of health to the London County Council.

The chairman said that among the former Middlesex men who had died during the past year was Warwick Deeping, the novelist, and mentioned that when one of Mr. Deeping's novels was filmed Middlesex men took part "to ensure accuracy of technique." It was unusual for a hospital to have two of its members knighted in the same year, and he congratulated Sir Harold Boldero, dean of the school, and Sir Harold Graham Hodgson. Another tribute was the institution by the Royal Australasian College of Surgeons of a Gordon-Taylor Prize. He announced that the *Archives of Middlesex Hospital* would be revived in 1951. Many of them, he continued, had been a little critical of the increase of administrative and clerical staff under the National Health Service, but, with a total population at Middlesex of about 2,500, the administrative staff formed about 8%. With the ratio of nurses to patients now approximately 1:1, and bearing in mind the vast services rendered apart from treatment, the percentage did not seem to be excessive. The new department of physiotherapy at the Middlesex, opened during the year, was agreed to be one of the best of its kind. In the medical school, the first two women students of Middlesex—Verity Wills and Jean Shanks—had qualified.

Responding to the toast of "The Hospital and School," the dean, Sir Harold Boldero, declared, "We are prepared to back youth at the Middlesex." After welcoming Professor Walls as the new professor of anatomy, Sir Harold turned to the increase in facilities in the clinical years at the school. They were grateful to their friends at the Central Middlesex Hospital, and in particular Dr. Joules, for an arrangement whereby students would go to that hospital for a portion of their clinical period. They were also beginning to develop their associated hospitals for teaching purposes—the Soho Hospital for Women, in gynaecology, and Harefield Sanatorium, for tuberculosis.

Mr. R. W. Gilliatt, as Senior Broderip Scholar, in a further and admirable response to the toast, referred to the ex-Servicemen who had returned to complete their training after the war; the first of these had qualified during the past year. Mr. D. H. Patey, in proposing the health of the chairman, mentioned that among those present was the chairman's daughter, herself a student at the hospital.

KING'S COLLEGE HOSPITAL

SIR LIONEL WHITBY ON THE ADVANCE OF MEDICINE

At the opening of the 121st winter session of King's College Hospital Medical School on September 29, with Mr. J. B. Hunter presiding, the scholarships and prizes were presented by Sir Lionel Whitby, regius professor of physic, University of Cambridge.

Sir Lionel Whitby said that King's College was one of the younger generation of great teaching hospitals, having been founded not in the eighteenth but in the nineteenth century. It was founded by churchmen, three years after University College, largely to counteract that seat of learning where no religious instruction was given. There had been three hospitals, two on the Strand site, and the present magnificent building on Denmark Hill, opened in 1913. At the time of the foundation of the hospital the practice of medicine was just about to pass from the empirical to the rational phase. Before that time there had been only one outstanding contribution to the control of disease—also a brilliant piece of empiricism—Edward Jenner's successful cross-immunization experiment with cowpox.

The council of the hospital was wise enough in 1877 to create an additional chair of clinical surgery and to invite Joseph Lister to join the staff. Nowadays there was no part of the body which could not be explored with complete freedom from the bogy of sepsis. From Lister's time until now there had been an epoch-making transition from the empirical to the rational, or from the pharmacopoeial to the specific. There had grown up an immense accumulation of knowledge of the habits of parasites and of the complex science of immunology. Not much more than 50 years ago most of the drugs in medicine were used—with much art and some skill and a certain measure of success—only for the alleviation of symptoms. There was little or no knowledge of their action on the primary cause of the disease. The advances in rational therapy had yielded a rich dividend.

It was remarkable to read the lives of men who had, so to speak, a foot in both eras. One such was his famous predecessor at Cambridge, Clifford Allbutt, of whom Sir Humphry Rolleston said that during his 89 years he witnessed changes in medicine which were never likely to be equalled. That, of course, was no longer true, for the speed of the advance had greatly quickened since Allbutt's death in 1925. Allbutt was born before the introduction of anaesthesia. He saw the development of bacteriology, immunology, antiseptic and aseptic surgery, the creation of the nursing profession,

astonishing progress in public health and preventive medicine, the discovery of *x* rays, radium, and vitamins, the beginnings of cardiology, biochemistry, endocrinology, and specialisms in many spheres.

The rapid evolution of medicine in this century had had a great impact upon its central figure, the patient. A man must now have many doctors and not just one, and because of the volume of ancillary examinations which were deemed necessary a serious illness was beyond the purse of the average person. This fact had hastened the institution of a State medical service, and in all civilized countries some form of subsidized service was developing. The British experiment had shown the fantastic cost of making everything free. In a case no more serious than pyrexia of unknown origin, which in due course might cure itself, the cost of establishing the diagnosis and determining whether the case was amenable to modern chemotherapy, and whether it was likely to be a menace to anyone else, was something like £50; while a case requiring thoracoplasty for tuberculosis might involve, before the job was completely finished, an expenditure of as much as £1,000. All were familiar with the formidable cost of such preparations as penicillin and streptomycin, yet in the interests of humanity these must not be withheld on economic grounds. It would obviously be a travesty of justice were such treatment available only to a few rich people.

The public had become aware of the notable advances in medicine. Not that the information given to them by the lay press was always accurate. He found himself being sometimes surprised by his own ignorance of the latest advances of medicine when these were mentioned to him by a lay friend who had skimmed an article in some publication or other. Indeed, the doctor who wished really to keep up to date would be well advised to subscribe, not only to the orthodox medical journals, but to the *Reader's Digest*, *Life*, and similar publications. (Laughter.)

The intervention of the State in medicine had been occasioned by war. The tremendous events of the last 50 years had forced the State first to interest itself in public health and then to extend its interest to the individual. But it was a remarkable fact that no sooner was the cure of one disease accomplished than another took its place. Moreover, in the enthusiasm of the sulphonamide era it was thought that such a disease as gonorrhoea had been brought under control, but now it was known that the organism was rapidly able to adapt itself to such drugs. The same thing might happen in due course with penicillin. Chronic disease, the degenerative processes which crippled and disabled in later life, and the activity of the malignant cell were not yet comprehended, much less controlled.

In conclusion Sir Lionel Whitby declared that individualism had done so much for medicine in the past that were it to be extinguished, either by State service or by regulations of any kind, or by too much insistence on plans and planning, then the future advances in medicine would never reach the high achievements of the past.

MEDICAL STUDENTS IN GREAT BRITAIN

In the two tables on this page the numbers of medical students in training during the last pre-war academic year (1938–9) have been compared with those in 1948–9. Table I shows the overall picture in Great Britain, and Table II deals with the medical schools of London University. In both tables clinical and preclinical students are considered together.

The rise in number of women medical students, as shown in these tables, is discussed in a leading article at p. 822.

TABLE I.—*Total Clinical and Preclinical Medical Students in Great Britain in the Academic Years 1938–9 and 1948–9*

	Men		Women		Total		Percentage Women	
	1938-9	1948-9	1938-9	1948-9	1938-9	1948-9	1938-9	1948-9
London:								
(1) Schools of University	4,513	4,096	551	888	5,064	4,984	10·9	17·8
(2) West London Hospital for Women*	—	12	38	68	38	80	100 } 11·5	85 } 18·9
Universities in provinces and Wales	2,879	3,337	708	1,104	3,587	4,441	19·7	24·9
Scotland:								
(1) Universities	2,336	2,836†	567	871†	2,903	3,707†	19·5	23·5
(2) Extra-mural schools	1,309		66		1,375		4·8 } 14·8	
Totals	11,037	10,281	1,930	2,931	12,967	13,212	14·9	22·2

* The West London Hospital for Women no longer admits new undergraduate medical students.
† This figure includes returns from the Anderson College of Medicine and St. Mungo's College, both in Glasgow, and from the School of Medicine of the Royal College in Edinburgh. These schools were classified as extra-mural in 1938-9; and at that time over 40% of the undergraduate medical students at these schools were from foreign countries.

TABLE II.—*Total Clinical and Preclinical Medical Students in the Schools of London University in the Academic Years 1938–9 and 1948–9**

Medical School	Men		Women		Total		Percentage Women	
	1938-9	1948-9	1938-9	1948-9	1938-9	1948-9	1938-9	1948-9
Charing Cross Hospital	122	146	—	21	122	167	0	12·6
Guy's Hospital	593	597	—	28	593	625	0	4·5
King's College	291	276	24	41	315	317	7·6	12·9
King's College Hospital	153	146	50	37	203	183	24·6	20·2
London Hospital	427	476	—	24	427	500	0	4·8
Royal Free Hospital†	—	5	357	464	357	469	100	98·9
Middlesex Hospital	437	418	—	32	437	450	0	7·1
Queen Mary College	42	47	4	5	46	52	8·7	9·6
St. Bartholomew's Hospital	828	610	—	83	828	693	0	12·0
St. George's Hospital	119	115	—	17	119	132	0	12·9
St. Mary's Hospital	436	410	—	25	436	435	0	5·7
St. Thomas's Hospital	475	348	—	27	475	375	0	7·2
University College	178	117	59	29	237	146	24·9	19·9
University College Hospital	275	256	57	49	332	305	17·2	16·1
Westminster Hospital	137	129	—	6	137	135	0	4·4
Totals	4,513	4,096	551	888	5,064	4,984	10·9	17·8

* Figures for the West London Hospital for Women, which is not a university medical school, are shown in Table I.
† Formerly London School of Medicine for Women.

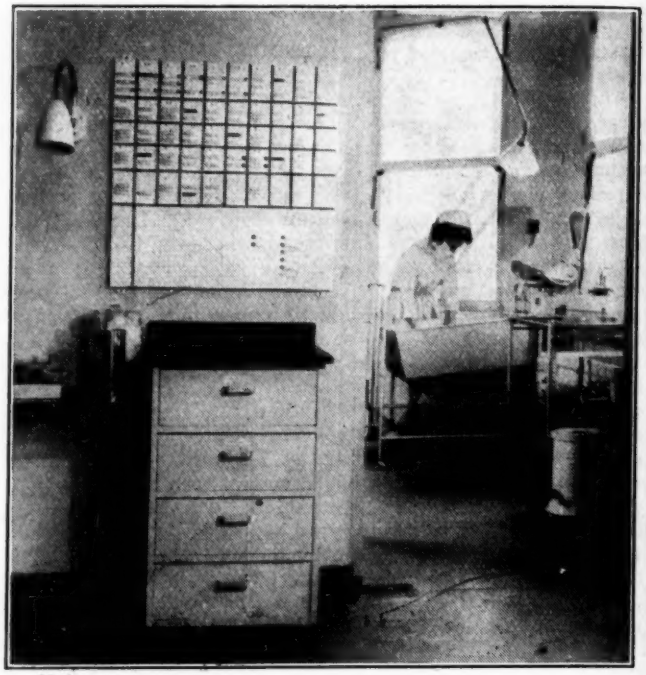
PREMATURE BABY UNIT

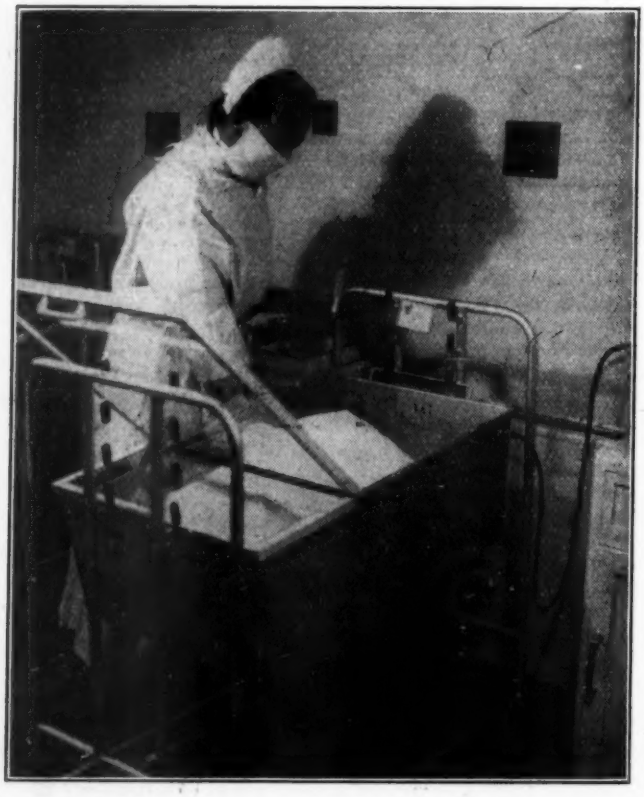
A unit for premature babies was opened on October 1 at the Obstetric Hospital, University College Hospital, London. The unit consists of two nurseries, each with six cots, and in addition an isolation nursery with two cots. One of the nurseries, called the "hot" nursery, is heated by electric wall-panels thermostatically controlled to 75° F. (23.9° C.). Here piped oxygen is available for each cot from a bank of oxygen cylinders outside the unit. The other, or cooler, nursery has the normal hospital heating, and the temperature will vary by a few degrees so that the babies can gradually become acclimatized. Babies under 4 lb. (1.8 kg.) in weight will be started in the "hot" nursery, and then, when they become able to control their own temperature, will be transferred to the other, while larger babies will be able to begin in the cooler nursery.

Some of the cots are fitted with a "perspex" lid, converting them into oxygen tents while affording the nurse a clear view of the child. One cot has an oxygen cylinder attached, and is for carrying the newborn babies from the delivery room. Between the two nurseries is the sister's duty room, where mothers who live near can come and feed their babies. There is also attached to the unit a milk-kitchen where foods are made up and sterilized. Breast-milk from the baby's mother will be used if possible, and in addition there is a breast-milk bank where the milk is stored in the frozen state. A coloured chart, marked for every half-hour of the twenty-four, indicates to the nurses the feeding times of all the babies.

The unit is intended to take not only babies born in the hospital but, up to about half its accommodation, babies born outside. Babies weighing less than 5 lb. (2.27 kg.) who are in need of special care which cannot be provided at home can be admitted by arrangement with the children's house-physician at University College Hospital. A specially constructed cot, with an oxygen cylinder, enables the baby to be brought by ambulance or car without need for any special attention to the atmosphere of the vehicle. A member of the premature-baby-unit staff will collect the baby by ambulance at any time of day or night from anywhere in the London area.

There are two other premature baby units in London, but this is the first to be constructed in a London undergraduate teaching hospital.





The physician responsible for the unit is Dr. Bernard Schlesinger, and the staff consists of a sister-in-charge and eight nurses, five day and three night. Sister E. M. Edwards achieved a record low mortality (8.1%) with an improvised premature baby nursery during the war. Of the babies born in the Obstetric Hospital about one in every sixteen is premature, and with the premature baby the danger of dying during the first month of life is twenty times greater than for the full-term baby, so that more than half the babies who die are premature, and die from causes directly related to prematurity. It is believed that this special care, with a trained staff available to handle and feed the babies, and the provision of extra warmth and oxygen, may result in halving the mortality.

KNOCKSHINNOCH COLLIERY DISASTER

The Scottish Secretary of the B.M.A. has received the following letter from the divisional medical officer of the National Coal Board in Scotland:

At last week's meeting of your Colliery Practitioners' Subcommittee I made some remarks about the excellent response the Knockshinnoch Castle Colliery disaster had elicited from the medical profession round about. Although we are writing to each doctor who helped us, I think it fitting that I should send you, as representing the medical profession in Scotland, a written appreciation of the doctors who helped.

The event at Knockshinnoch Castle Colliery, New Cumnock, created a potential or actual demand on doctors for the space of some 60 hours, and throughout that time we had a ready response not only from the local general practitioners but from the staff of the hospitals and from other doctors many miles away. This involved, in some cases, a stay of a couple of days at the colliery and a long spell underground—a stout effort for some who had no previous experience of mines.

I must say that although I expected willing help I was not quite prepared either for the number of helpers or for the extent of their help. Also worthy of note was the very smooth collaboration of all the doctors concerned. I assure you it is a great comfort to us, and must be to all our men, to know that in a crisis we can count on receiving such assistance.

I have not singled out any individuals, since any distinction, where all gave of their best, would be invidious, but I attach a full list of our helpers.

The Secretary of State for Scotland has also sent his thanks to the medical and nursing staff of Ballochmyle Hospital for the way they transported and treated 98 patients from the colliery.

Correspondence

A Secret Remedy for Cancer

Sir,—I am a week late in congratulating you upon your excellent leading article in the *Journal* of September 16 (p. 663). I do so now because my letter in response to an invitation from *Picture Post* to give them my opinion on their article was not published by them. This was not unexpected, as in it I observed that I had "rarely, in a long experience, known a reputable journal do such a great disservice to the community."—I am, etc.,

London, W.1. Horder.

Distinction Awards

Sir,—Mr. R. S. Murley does Lord Moran less than justice in his comments in your issue of September 23, p. 726, on the meetings called by Lord Moran in the North-west Metropolitan Region to discuss the whole question of distinction awards. I am sure that this is only because Mr. Murley was not present at the meeting and is incompletely informed about what went on, since it seems fair to assume that the meetings were conducted on the same basis as one held in the South-eastern Metropolitan Region at which I personally was present. At this meeting it was made abundantly clear that Lord Moran, so far from delegating his responsibilities, was in fact putting in a tremendous amount of time and work in order to discharge those responsibilities to everybody's satisfaction. He intimated that, although the Distinction Awards Committee had an enormous amount of information available about consultants, it would be helpful if subcommittees elected in the various regions by the local consultants would give the Central Awards Committee their views on which consultants should become the recipients of distinction awards. He did not demand that a subcommittee should be formed, but hoped that it would be. Those of us present were not compelled to form the committee then and there, and we could have called further meetings to discuss it, or have carried out the election of the committee in any way which we saw fit. It seems, therefore, quite unfair to blame Lord Moran for his attempt to gain further information which might make the decisions on these distinction awards fairer than otherwise, and if Mr. Murley has any complaint of the manner of his own election to the local subcommittee, surely it should be addressed to his colleagues who attended the meeting and elected him?

While Mr. Murley may be on firmer ground when complaining of the shortness of the time allowed for these subcommittees to deliberate, he is on less firm ground in complaining that his subcommittee has to make "decisions of so great importance." In fact his committee is not being asked to make any decision at all, but is simply being asked for its opinion. It is being asked to provide one facet of evidence and not to allot the distinction awards; and it must surely be inferred that those at least of his colleagues who elected him must consider that Mr. Murley already has sufficient knowledge of his colleagues' ability and qualifications to be able to express an opinion on them. Viewed in this light, the length of time remaining for deliberation may not seem too short after all.

Mr. Murley further states that the consultants are entitled to ask for as just a method as possible of selection. At the meeting at which I was present, Lord Moran made it abundantly clear that the Central Distinction Awards Committee was making unusually exhaustive investigations in its efforts to make the selection fair, and that this request for the opinions of local subcommittees, albeit perhaps a little tardy, was only intended to round off the evidence so that so far as was humanly possible no one could feel that any claim of his to distinction had been overlooked.

On the question of the distastefulness of his task, Mr. Murley must, I think, have felt that it was distasteful to him largely because it is a new and unfamiliar task, but the principle of choice underlying this task is nothing new, and I have little doubt that Mr. Murley has on numerous occasions sat in judgment without a qualm upon, admittedly, a junior colleague when deciding his fitness for an appointment.

This brings us, I think, to the whole kernel of the acrid discussion which has gone on about distinction awards. Mr. Murley says that the only true reward for distinction is distinction, but it would be ignoring the facts of the situation to pretend that a certain, shall we say, financial improvement was not prone to accompany distinction in the old days, and it would be ignoring human nature to pretend that this fact did not influence those who chose medicine as a profession. I, no less than Mr. Murley, have viewed the whole question of distinction awards with distaste and misgivings, but in the light of the above consideration it seems fair to crystallize the problem down to one simple question: Is it worse to accept a financial award for distinction when it is judged by one's own colleagues on the fairest basis that they can devise, than to accept that award piecemeal when it is based upon the estimate patients have of one and which they show by their willingness to pay private fees? Quite honestly I cannot see that there is very much in it. On the one hand, patients may be somewhat gulled by plausible and smooth-mannered doctors; on the other, Central Awards Committees, no matter how conscientious, are very likely to make errors of judgment and overlook deserving individuals. Looking at it from this point of view, it was with some relief that I heard Lord Moran say that the whole point of the system of distinction awards was to preserve an incentive by which to draw able men into the profession when, as it seemed, the rewards of private practice are likely steadily to dwindle.

If there is any substance in the argument that the awards are to take the place of the financial rewards of private practice, it is obvious that hard facts make it necessary that the system of awards shall be started as soon as possible, and it should be remembered that we are, after all, free at any time to change and modify the system of selection and the size of the awards in any way that we think right. We are even free, as a magnificent gesture of renunciation, to hand the money all back again.—I am, etc.,

Shorne, near Gravesend. O. J. Vaughan-Jackson.

Sir,—Dr. R. S. Murley's timely letter (September 23, p. 726) on this subject underlines the profound disquiet existing throughout the consulting side of the profession. Even more disturbing is the disclosure of the almost complete apathy shown towards the subject as a whole when four consultants of the forty entitled to attend turned up at the local meeting called by Lord Moran. Whenever this topic has arisen at any hospital committee meeting I have attended during the past fifteen months the same lack of interest, coupled with ironic expressions of derision, has been evinced. The root of this attitude lies in the generally held conviction that the non-teaching hospital men have been sold out to their teaching hospital colleagues as a deliberate act of "Divide and rule" by the Minister, a feeling which is emphasized whenever the activities of the selection boards for new appointments in our area come up for discussion.

It is conceded by most of us that inevitably the Service will become organized on lines similar to those existing in the medical side of the armed Forces, and that it is more tactful to restrain public expressions of criticism where these seem unlikely to influence the trend of events. The dry rot has set in. It is definitely not wise to become an overt malcontent.

Dr. Murley invites attention to the "indecent haste" characterizing Lord Moran's present activities. His area was given four weeks to organize the required form of assistance to the awards committee, which "has to complete its work by the middle of October." My hospital group was invited to meet Lord Moran for the same purpose on October 5! Mid-October was then less than ten days off! Would any self-respecting consultant in this area feel it worth the time involved in allocating an evening for so nebulous a purpose; or even worth while putting pen to paper to criticize so patent a device to clothe exclusive and arbitrary decisions with the more pleasing robes of democratic participation and acquiescence? Last August the awards committee made use of a similar strategy in the S.W. regional area when they arbitrarily excluded all those consultants appointed after appeal regrading from participation in routine merit award consideration, the reason given being

that there had been "insufficient time available to their office staff" to include the recently arrived new names on their typewritten duplicated list. They found two months insufficient for this purpose. No one in the area bothered to protest.

It is obvious that the merit awards committee can do what it likes, that it likes doing it, and that it need apprehend no spirited organized attempt to question its findings, or the details upon which such findings are based in any individual case. The Minister will continue to expect two men doing exactly the same type of clinical work to accept utterly different rates of remuneration side by side in brotherly amity. One will secure the "rate for the job," the other "the distinction of his own distinction."

The worst feature of the matter is that the awards are for life and pensionable. Surely at the outset of a new and necessarily experimental State medical scheme its organizers ought not to saddle the country with irrevocable financial commitments of this controversial type and magnitude. If the awards are to be made at all, they should be for maximum periods of three to five years, non-pensionable, renewable by further re-election, and coupled with a system of outright lump sum awards from time to time (in the manner of the Nobel prizes) for unquestioned contributions to the advance of medical science. —I am, etc.,

London, W.1. LIONEL M. GREEN.

Improving the Medical Curriculum

SIR,—I wish to congratulate you, first of all, on an exceedingly interesting educational number of the *Journal* (August 26), which is well worth and demands the attention of all those interested in medical education. Having as long ago as 1933 advocated a special course of education for those students intending to enter general practice, I was particularly interested in those articles dealing with that side of medicine. I have in the past advocated four things which I thought would improve the work of the general practitioner: the development of treatment centres, now known as rheumatic clinics; the provision of centres for clinical pathology, *x*-ray investigations, and physiotherapy for the general practitioner; the association of general practitioners with the work of hospitals; a special pre-graduate course for general practitioners. The first rheumatic clinic was developed at my suggestion by the Kensington division of the London County branch of the B.R.C.S. as long ago as 1922. There seems to be general agreement about my second and third points, and somewhat unexpectedly I now find support for my fourth proposition.

I feel that I somewhat light-heartedly suggested a special course of instruction for students intending to engage in general practice; the subject is obviously a very complicated one, but I still think I was right. But we must first decide what form this special education is to take. I do not feel that wholesale condemnation of previous methods such as characterizes Dr. Donald Johnson's article (p. 493) will advance us much. Unless medical education deteriorated much from the standards of 25 years before Dr. Johnson's time I cannot think many of his criticisms are or were justified. Of course our ideas of education have evolved and are still evolving, but I think much of the student's failure to benefit from instruction lies at the student's door. I am sure much of my failure could be attributed to myself.

Still considerable improvements in medical education are attainable, but we must make up our minds what these should be. It has been suggested that a general practitioner should take part in the teaching. Probably a sound suggestion, but what is he or she to teach? So far the role assigned to him seems to be little more than instructor in the necessary deportment towards patient and relatives. The Syracuse Medical School (U.S.A.) makes the student take an interest in one patient, not only studying him in hospital, but investigating his home surroundings and conditions. The general-practitioner teacher could give much useful instruction here.

I am no educationist, but, stepping in where angels fear to tread, I suggested in a memorandum to the conference of representatives of the Universities, Royal Colleges, and the Society of Apothecaries, met to consider the medical curriculum, that the prospective general practitioner should be taught thoroughly the common diseases, relying on the consultant for the rarer diseases, yet having fuller instruction in such of these latter diseases as throw light on organic function—e.g., osteitis fibrosa cystica due to overfunctioning of those little-understood parathyroid glands. With his curriculum thus modified the student should receive fuller instruction in such subjects as dietetics, balneology and other forms of physical treatment, psychology, and industrial medicine.

These are my views, but the whole subject is beset with difficulties. Nevertheless it behoves us to decide what alterations, if any, are desirable.—I am, etc.,

London, W.8. HAROLD H. SANGUINETTI.

"Dramamine" and Sea-sickness

SIR,—Your recent observations (*Journal*, September 23, p. 719) again champion hyoscine against the antihistamine drugs in the treatment of motion sickness. Recently, I took an appointment as a ship surgeon for a short period. I tried out the routine suggested by Dr. F. K. Beaumont in a letter to the *Journal* (1949), **2**, 1473. This was to take an "antergan" 100 mg. tablet at night and "phenergan" 25 mg. tablets t.d.s. I was very much impressed with the results obtained using these antihistamine drugs in treating sea-sickness among the passengers. Also for the first time I avoided being sea-sick myself.

It seems to be difficult to produce statistical evidence that these drugs are more efficacious than hyoscine, but from my own observations I feel very convinced that the proof of this pudding is in the eating. It would be interesting to know if Dr. Beaumont, who, I believe, is ship surgeon in the *Queen Elizabeth*, still prefers the antihistamines to hyoscine. —I am, etc.,

London, W.2. M. F. BETHELL.

SIR,—As an off-shore cruising addict and a thoroughly bad sailor I have for many years tried the current remedies for sea-sickness, from "mothersil" to hyoscine, with and without amphetamine. The trouble with all I have previously used has been that, taken over a period of days, the side-effects—dryness, anorexia, and loss of visual accommodation—have been almost as trying as the original complaint. In other words they have been effective for short periods but not for long.

This summer, however, over a period of several days I used "dramamine" in conditions which would ordinarily have prostrated me, and found it to be, for me at least, the answer to a sailor's prayer. I say "prostrated" advisedly—my variety of the complaint being that while horizontal I am perfectly comfortable, but when vertical I am anything but. With dramamine I could eat normally, stand my watches without undue somnolence, and, except for slight but not unpleasant dryness, felt no side-effects at all.

There are probably many individual types of sea-sickness, as there are of most allergic troubles, and the remark at the end of your annotation on Professor J. H. Burn's interesting article (September 23, p. 691), that hyoscine is best, may hold for the group of such troubles taken as a whole, but in my own case it certainly does not.—I am, etc.,

Beccles, Suffolk. C. GRANTHAM-HILL.

Antihistaminics and Nocturnal Frequency

SIR,—After reading Professor J. H. Burn's interesting paper on the pharmacological action of antihistamine compounds in the *Journal* (September 23, p. 691), I am prompted to record that I have found these substances to be effective in relieving some patients suffering from nocturnal frequency of micturition, which is usually due to prostatic enlargement. My attention was first drawn to this therapeutic use of antihistamine drugs by my colleague, Mr. Ian Robin. He had occasion to prescribe "anthisan" to a middle-aged man suffering from rhinitis; his patient noticed that after taking this drug not only were the symptoms of rhinitis relieved, but his sleep was no longer disturbed by a troublesome frequency of micturition from which he also suffered.

Subsequently I have prescribed "benadryl" to six unselected patients suffering from frequent nocturia; three derived relief. In one of the latter cases the patient after taking the drug declined to undergo an operation for prostatectomy to which he had previously agreed, for the frequency of micturition had greatly diminished, seemingly as a result of medication. Admittedly, one cannot draw any definite conclusions from such few cases, but I hope after a more extensive and carefully controlled trial with antihistamine substances that these compounds will be found to be useful in relieving the troublesome bladder symptom of nocturnal frequency.—I am, etc.,

London, W.1. VALENTINE SWAIN.

Infection by Syringe

SIR,—I was greatly interested in the paper by Dr. R. J. Evans and Professor E. T. C. Spooner (July 22, p. 185), your annotation on the subject (p. 204), and the three subsequent letters from Sir Alexander Fleming and Drs. G. Bousfield and R. R. Hughes (August 5, pp. 365 and 366). There are two points arising out of this paper and correspondence which I think merit further attention. The first is the renewed support given to the use of hot oil as a sterilizing agent by Sir Alexander Fleming, since there has been a wide fluctuation of opinion on the value of this method of sterilization in recent years. In 1941 an M.R.C. committee advocated the sterilization of syringes by drawing up oil at a temperature of 120°–130° C. with inversion of the syringe. It was stated that 160° C. should not be exceeded. In 1940, however, Bigger and others had written, "We have proved experimentally that the drawing up of boiling oil into the barrel of a syringe fails to sterilize it if sporing organisms are present even in small numbers," and in 1945 a special M.R.C. committee condemned the use of hot oil for syringe sterilization, stating that "even vegetative organisms dried on the glass are not uniformly destroyed." In 1946 Rogers (as Sir Alexander has pointed out) again recommended the method and put forward experimental evidence of the efficiency of oil at 120°–140° C.

I became personally interested in this question, since I had been in the habit of using hot oil for resterilization of syringes between injections until the report of Bigger and his co-workers came to my notice. In 1945, therefore, I carried out a series of experiments in an attempt to evolve a method by which hot-oil sterilization could be made effective.

My experiments were interrupted and showed no promise of success, so the work was never published. Since, however, it supports the conclusions of the special M.R.C. committee and it appears contrary to the subsequently published findings of Rogers, I propose to summarize it briefly here before attempting to reconcile these opposing views.

My approach to the problem was influenced by two considerations: the first that heating by hot oil is a form of application of *dry* heat, the second that any contaminant gaining admission to a syringe while in use will be in a watery environment. In this connexion it should be noted that it was "vegetative organisms *dried on the glass*" (my italics) that were stated to have survived the experiments carried out by the members of the special M.R.C. committee, and that in his letter Sir Alexander Fleming refers to *the boiling of the water in the needle* as the means of destruction of pathogens in the latter when it is dipped in oil at 150°–160° C. for 10 seconds. I therefore carried out parallel experiments on wet-contaminated and dry-contaminated syringes. In other tests 0.1–0.2 ml. of water was introduced into the contaminated syringes before hot oil was drawn up. The intention in these last tests was that the water should be boiled by the entering oil and the steam so produced become the effective bactericidal agent.

Experiments were carried out on these lines at various temperatures and for different periods of exposure. The number of times oil was admitted and expelled was varied, and tests were made with and without inversion of the syringe. The contaminant used was *Staph. pyogenes*, and it was proposed to employ *B. subtilis* later if success was achieved against the former species. *B. subtilis* was in fact never used, however, as, even with oil temperatures up to 170° C. and moisture present, all staphylococci in the syringe were not killed, and cultures of saline and bicarbonate solutions used to wash out the treated syringes were positive.

In order to reconcile these differences it is, I suggest, necessary to give separate consideration to *primary* and *secondary* contamination and to the requirements for sterilization of articles exposed to either. Primary contamination might be defined as the type of contamination liable to follow exposure to general internal and external contact with bacteria or other infective agents. The term secondary contamination could suitably be applied to the entry of such agents into, or via, the needle of a sterile syringe, following its use for making an injection. Primary sterilization to overcome primary contamination must therefore be capable of destroying organisms on the side of the piston and on that part of the inner surface of the upper end of the barrel of the syringe which remains in contact with the piston even when it is withdrawn to the limit possible while in use. These areas cannot come into direct contact with any fluid drawn up into the syringe. Their sterilization by means of the heat of such a fluid must be brought about indirectly through the piston. For this to be effective is a practical impossibility. A metal piston heated to such a degree will become jammed—or crack the glass barrel. A glass plunger would never reach an adequate temperature throughout owing to poor conductivity. It follows that primary sterilization by the drawing up of hot oil into an assembled syringe must be unreliable.

In the case of secondary sterilization after injection of the contents of a previously sterilized syringe, however, conditions are very different. Here any secondary contamination which may have occurred will be limited to the needle or distal end of the barrel of the syringe. Organisms will be suspended in fluid. Contaminants will thus come into immediate close contact with the hot oil introduced, so that their destruction when the temperature of the latter is adequate should be ensured.

The different results obtained by Rogers and myself may be subject to explanation on such lines. In my experiments contamination of the side of the piston and upper part of the interior of the barrel was ensured. In Rogers's first three observations contamination appears to have been produced by aspiration. Whether aspiration contamination is of primary or secondary type (as defined above) might well depend on the degree to which the interior of the syringe can be made wet, and this in turn be limited by the presence of a film of oil. It appears that Rogers maintains his syringes in an oily state. It is therefore suggested that the nature of contamination produced and adequately dealt with in his first experiments resembled secondary contamination in that the inaccessible parts of the syringe remained bacteria-free. When he used a method involving frank primary contamination, it seems that the separate parts of the syringe were treated by immersion in the oil.

The second point which seemed to me to call for attention concerns the distance up the needle lumen which may be contaminated before its removal from the syringe, following injection of an infected tissue or cavity. If, as seems unlikely, however, the greater length of the needle is internally contaminated failure of sterilization by merely dipping the needle in hot oil (Sir A. Fleming) or flaming a platinum one (annotation) might possibly occur, since heating of the distal portion of the infected column of fluid might drive the upper portion still containing viable organisms upwards towards, or into, the syringe. The upper limit of internal needle contamination might be investigated by contaminating needles on the lines described by Dr. Evans and Professor Spooner, cutting off with a sterile cutter various lengths of different needles while still in place on the syringes, injecting the sterile contents of the syringe through the needle butt into a suitable medium or animal, and noting the length of needle which has to be removed for the syringe contents passing through the butt to remain sterile.

To avoid the complicating factor of external contamination the needle might be treated by the external application of a volatile disinfectant, insoluble in water and active against the contaminant (e.g., ether for coliform bacilli). The needle might if necessary be sealed before such treatment with, for example, sterile paraffin.

In conclusion: The methods suggested by your correspondents for control of backward contamination can be experimentally tested. It would, I suggest, be most valuable if this were done by experiments on the lines of those described by Dr. Evans

and Professor Spooner and preferably by them. Only then can a final judgment be given on the best method of preventing such backward contamination of a syringe and its contents.—I am, etc.,

Fayid, M.E.L.F. G. T. L. ARCHER, Colonel, R.A.M.C.

REFERENCES

Bigger, J. W., *et al.*, *British Medical Journal*, 1940, 1, 79.
M.R.C. War Memorandum No. 6, 1941. London.
M.R.C. War Memorandum No. 15, 1945. London.
Rogers, K. B., *Lancet*, 1946, 2, 87.

SIR,—With reference to the article by Drs. R. J. Evans and E. T. C. Spooner on the transfer of infection by syringes during mass inoculation (*Journal*, July 22, p. 185), I wonder if the method adopted by me about 20 years ago during a cholera epidemic in Bombay might overcome the difficulty of the infected needle. After each inoculation two or three drops of the vaccine were expelled into a kidney-tray and rejected, and the needle was dipped at once into hot "vaseline" kept over a bunsen flame and maintained at between 160° and 170° C. The vaseline tends to make the needle puncture easier and less painful.

Changing the needle after each injection will be a surer way of ensuring sterility, but when one had to inoculate nearly 300 medical students and an equal number of nurses in the course of an afternoon, besides the routine laboratory work, the time factor was a consideration.—I am, etc.,

Bombay. P. A. DALAL.

Mortality in Bleeding Peptic Ulcer

SIR,—The discrepancies in the mortality rates reported from Newcastle and Aberdeen (see *Journal*, July 15, pp. 133, 138, 153) are interesting and important. Is the low mortality at Newcastle representative for the district, or is it exceptional to Dr. A. G. Ogilvie's wards? In view of the comments of a previous correspondent I will not present a burden of statistics, but I have looked up the death rate from peptic ulcer in Aberdeen and in Newcastle in the Annual Reports published by the Registrar-General and it is clear that there is little between the two cities. It is, therefore, unlikely that Dr. Ogilvie's experience is representative of Newcastle as a whole. I think the excellence of his figures is due to two reasons. First, while not professing to be particularly interested in gastroenterology, he has been particularly vigilant of emergencies admitted to his wards—a time-consuming task which nevertheless pays good dividends with patients with bleeding ulcer, particularly when under 70. Secondly, he has been distinctly lucky in having so few admissions over 70. In the Central Middlesex Hospital 20% of my admissions with haematemesis and melaena are over 70, and in this age group there is a mortality of at least 30%, a heavy statistical millstone. Ogilvie and Spencer had only 2% of patients over 70, and it is likely that the old decrepit bleeders, whom we know so well in this district hospital, do not find their way to his teaching wards.

Haematemesis and melaena form an appreciable part of the emergency work of all hospitals, and the varying mortality figures reported suggest that there may still be scope for improvement in management. At St. Mark's Hospital there is an admirable custom of reviewing the work of the hospital every three to six months, and the meeting is attended by all members of the consulting staff. It would be entirely feasible for members of the staffs of hospitals to review certain groups of admissions, such as haematemesis, at intervals and agree on lines of treatment, particularly in regard to indications for operation. Moreover, periodic review of cases might stimulate extra interest and vigilance for these patients—so necessary in preventing the patient from reaching anoxaemic levels, and so necessary for selecting the right case for operation without undue delay. Such reviews might help to reduce the mortality of mass hospital statistics to the lower figures to be found among series reported by interested individuals.—I am, etc.,

London, N.W.10. F. AVERY JONES.

Amplifying Heart Sounds

SIR,—I read with interest and surprise the annotation (*Journal*, September 2, p. 567) on phonocardiography. The reproduction of the heart sounds and murmurs through a loudspeaker, though practised by some workers, can never be really satisfactory. The frequency response of a loudspeaker is far from ideal. The high frequency components of the sounds tend to be projected forward in a narrow beam and the low frequency ones tend to escape sidewards unless special precautions are adopted. Those near the sound reproducer hear the sounds as of a quality and intensity different from those further away. The quality of the sounds as perceived by the ear is modified by the physiology of hearing, as a study of Fletcher and Munson's normal threshold curves of audibility shows. The reverberation effects due to the acoustics of the room further complicate matters. Unless special precautions are taken the microphone picks up the amplified sounds coming from the loudspeaker and these are further amplified. This means that acoustic feedback is set up and the amplified sounds tend to be further distorted. As a matter of fact they may eventually be replaced by a howl whose pitch depends upon the characteristics of the microphone, the sound amplifier, the loudspeaker, and the distance between the loudspeaker and the microphone. It is no wonder that the average auscultator rejects these distorted sounds as being a faithful reproduction. The ear is very tolerant to bad reproduction, but there is a limit to what even it can stand.

It is rather unfortunate that the annotation suggested that a loudspeaker may be used and did not mention that multiple moving-coil headphones are the method of choice for teaching purposes. The degree of faithful reproduction obtained by this method is greater than by any other. There is the added advantage that the patient is not upset by hearing his own amplified heart sounds. It is possible by adjusting a frequency control to enable the auscultator to obtain the degree of pitch and quality of the acoustic stethoscope, but from a purely scientific point of view it would appear to be fundamentally unsound to deteriorate a method which is capable of improved reproduction to the level of a stethoscope which was originally invented a hundred years ago. It seems that the auscultator should learn to hear the heart sounds truly, and that the method should not be debased to the level of his previous experience. Tone controls can be justifiably used to accentuate wanted sounds or murmurs, but it is very desirable that the auscultator should know the exact physical effects of what he is doing. The loudness of the sounds as heard through the headphones can be governed by a tone-compensated gain-control which helps to correct certain deficiencies in the human hearing.

I note that the annotation states that a loudspeaker may replace the recording apparatus of the phonocardiograph. I would suggest that the words "may replace" should not have been used but rather the words "may be used with." It is highly desirable that a subjective method like auscultation should be simultaneously correlated with an objective method such as phonocardiography.

The annotation states that it is very difficult to obtain faithful reproduction by this or other mechanical devices, and indeed, however faithful the reproduction, the method seems to be of very limited value. This, I would suggest, is untrue. It is also untrue that there can be no effective substitute for the practice of the close personal application of the acoustic stethoscope. Since the acoustic stethoscope is nothing more than a hearing-aid, and an obsolete form at that, I suggest that it should be replaced by a properly designed electronic stethoscope. It is also desirable that the auscultator should have his audiogram done and that the electronic stethoscope be suitably adjusted to compensate for any defects in his hearing.

The best method is the one introduced by myself, which incorporates a double-beam cathode-ray oscilloscope with a fluorescent screen of long afterglow. The method permits the direct, instantaneous, and constant viewing of two phenomena such as the phonocardiogram and electrocardiogram, the phonocardiogram and electrical-sphygmogram, etc., without the necessity of photographic registration and consequent delay in

developing film. At the same time the heart sounds can be heard through moving-coil headphones by one or many auscultatots. The logarithmic, stethoscopic, and linear phonocardiograms are easily recorded. It is possible with this method for a group of students to hear and see the sounds produced by the heart, including those not audible to the human ear with the ordinary stethoscope, as well as the sounds and murmurs reasonably amplified which he should be able to hear with the simple stethoscope. At the same time they give visible evidence of the correlation of these sounds with the various phases of the cardiac cycle. The simultaneous seeing and hearing of the same phenomena by the teacher and student is an advantage, as the student's immediate attention can be drawn to the feature commented upon by the teacher. The traces on the long afterglow screen provide identifying characteristics of the murmurs and sounds—so that the auscultator will know for what to listen. The auscultator associates the traces with their sounds and quickly recognizes the sounds within his own particular auditory limits by hearing alone. Not the least advantage is the saving of the instructor's time and the patient's strength.

It is necessary for the advancement of phonocardiography that it should develop in a favourable climate of opinion. Manufacturers, physicists, and medical research workers will be chary of producing suitable instruments if the view expressed in the annotation is typical of the reaction of the profession to these new advances.—I am, etc.,

Gorseinon, Glam. G. E. DONOVAN.

REFERENCES

Donovan, G. E., *J. Instn Elect. Engrs*, 1943, **90**, 38.
—— *Irish J. med. Sci.*, 1943, **6S**, 583.
—— *Med. Pr.* (abstract), 1943, **209**, 298.
—— *Proc. R. Soc. Med.*, 1943, **36**, 603.
—— *Lancet*, 1944, **1**, 500.
—— *Brit. med. Bull.*, 1945, **3**, 137.
—— *Lancet*, 1948, **2**, 401.

Johann Mikulicz-Radecki: A Reply

SIR,—Sir Gordon Gordon-Taylor was quite justified in referring to Johann von Mikulicz-Radecki as a German surgeon rather than a Polish patriot as Dr. Galewski does (*Journal*, September 9, p. 630).

Johannes von Mikulicz-Radecki was born in Czernowitz on May 18, 1850, which was at that time the capital of the Austrian county Bukovina and a German-speaking city. Hence a Rumanian chauvinist might claim Mikulicz-Radecki as a Rumanian. His father was born in Sniatyn, which is in Eastern Galicia, and since this region is now under Russian domination the Russians will probably be delighted to claim Mikulicz-Radecki as a Russian surgeon. Some, however, regard Mikulicz-Radecki, because of his origin, as a Ukrainian.

All this meant very little at a time when these regions belonged to Austria, and it may be claimed that Mikulicz-Radecki was a typical Austrian, not only because of his origin and the civilization to which he undoubtedly belonged, but also because of his own personal character. He was not affected by nationalism and nationalistic politics, and was deeply interested in music, which earned him the first interest of Billroth, his Viennese teacher in surgery. Furthermore, Mikulicz-Radecki's father was an Imperial Councillor, and this title would have never been conferred or accepted if he had been a rebel, which Dr. Galewski claims him to have been. It is of interest that at that time the Austrian Empire maintained two Polish universities, whereas neither in the German nor in the Russian part of Poland was any such university in existence. Furthermore, Mikulicz-Radecki was educated exclusively in German-speaking schools although there were numerous Polish-speaking schools at his disposal in Austria.

After Mikulicz-Radecki had graduated he was appointed by Billroth and quickly rose to be his second assistant, next to Wölfler. Soon afterwards he received the lectorship of the Viennese medical faculty and the title of *Dozent* was conferred on him. This did not involve his leaving the faculty; on the contrary, he would have lost the title if he had left the faculty. Furthermore, he was appointed director of the surgical department of the Viennese Poliklinik. The professorship in Graz was not withheld because he was a Polish national but because Wölfler was his senior. It is of interest that in Austria even a Pole could become a prime minister (this actually happened), and there were a number of Polish cabinet ministers quite apart from numerous high officials both in the civil service and at Court.

When Mikulicz-Radecki was offered the chair at Cracow he was quite embarrassed because did not have sufficient command of the Polish language. He had to acquire it. He was even regarded as a stranger in Cracow for some time, and not until later did he receive the public recognition which was intended to prevent him from accepting an invitation to Königsberg, in Prussia. Actually Mikulicz-Radecki went gladly to Germany, where he had much wider opportunities for work. He was later on invited to Breslau from Königsberg, and at Breslau his clinic was so well endowed that he refused a subsequent invitation to become Gussenbauer's successor in Vienna. Mikulicz-Radecki developed a carcinoma while living in Breslau and he died on June 5, 1905. In view of his lifelong teaching in German-speaking universities in Vienna, Königsberg, and Breslau, and because of his membership of the Deutsche Gesellschaft für Chirurgie, he may be regarded as a German surgeon just as much as the Swiss Kocher or the Austrian Finsterer. These facts can be found in the *Wien. klin. Wschr.*, 1905, **18**, 67, *Zbl. Chir.*, 1905, **32**, No. 26, and in textbooks on the history of medicine.—I am, etc.,

London, W.1. ALBERT W. BAUER.

Infection from the Bite of a Bear

SIR,—Human infections with organisms of the *Pasteurella* group occurring in this country are perhaps sufficiently rare to merit recording the following case.

A man aged 41, an animal-trainer, was admitted to the County Hospital, Hereford, on September 29, 1948, suffering from wounds to his right hand caused by the bite of a bear three days previously. Lacerations were present on both palmar and dorsal surfaces and had been previously sutured. The hand was swollen and the wound on the dorsum was discharging. The temperature was 100.9° F. pulse 88, and respiration 20 per minute. No lymphangitis or adenitis was present. Sutures on the dorsum were removed and treatment commenced with penicillin, 50,000 units three-hourly by injection; sulphathiazole 2 g. followed by 1 g. four-hourly was also given for 48 hours.

A swab taken from the wound on admission showed, in the direct film, pus with Gram-positive cocci and occasional Gram-negative short bacilli. Cultures, on blood agar plates, gave a profuse growth of alpha-haemolytic streptococci and a Gram-negative cocco-bacillus, both sensitive to penicillin (by paper disk method).

The wound continued to discharge. A further swab taken on October 8 showed, in the direct film, pus with a few Gram-positive cocci and small Gram-negative cocci and bacilli. Cultures yielded a pure growth of a Gram-negative cocco-bacillus, sensitive to penicillin. In spite of continued penicillin, the wound was slow to heal and was twice explored and drained (on October 20 and November 4). A further swab taken on October 30 yielded *Staphylococcus pyogenes* insensitive to penicillin. Penicillin was then discontinued and sulphadiazine given until November 12. By November 18 the wound was healed and finger movements good apart from some difficulty in opposing the little finger to the thumb.

The further investigation of the organism twice isolated from the wound showed the following characters. A 24-hour culture on blood agar yielded flat, 2 mm. diameter, shiny, translucent, convex, non-haemolytic colonies, under both aerobic and anaerobic conditions. Films from this showed a small Gram-negative cocco-bacillus with filaments up to 10–15 μ. In broth cultures a turbidity with a thick deposit was produced. Growth was poor on nutrient agar and slow in peptone water. Fermentation reactions: acid in glucose, mannite, sucrose, xylose, slight in maltose, no change in lactose, litmus milk, or salicin. No liquefaction of gelatin or serum was produced. The organism was non-motile and produced indole in peptone water. Mice inoculated with a suspension of a 24-hour Loeffler slope culture were unaffected.

The organism appeared, therefore, to be an avirulent strain of *Pasteurella septica*, Group II,[1] belonging to the group of organisms causing pasteurellosis or haemorrhagic septicaemia of fowls and mammals. Previous cases have been described following cat and dog bites,[2] some being complicated by osteomyelitis. Occasional cases have developed pleurisy or meningitis. Organisms of this group are said to be widely distributed,

being frequently found in the upper air passages of normal cattle, horses, swine, sheep, dogs, and cats, and less frequently in the intestinal tract. It is somewhat surprising, therefore, that they are not more frequently found in wounds from animal bites.

I am indebted to Dr. Pat Brown, medical superintendent of the County Hospital, Hereford, for permission to use the case notes, and to Dr. M. E. Morgan Thomas, of the Central Public Health Laboratory, who performed the animal inoculations, for help in identification of the organism.

—I am, etc.,

Hereford. W. H. J. Baker.

References

[1] Mackie, T. J., and McCartney, J. E., *Handbook of Practical Bacteriology*, 1948, p. 446, 8th ed. Edinburgh: E. & S. Livingstone.
[2] Topley and Wilson's *Principles of Bacteriology and Immunity*, 1946, **2**, 1648 3rd ed. London: Edward Arnold.

Preventing Wastage of Stored Blood

Sir,—It is obviously desirable to eliminate avoidable wastage of stored blood. In consequence of the spoiling of bottles of whole blood due to refrigeration faults we decided to install refrigerator alarm systems in a group of general hospitals after consultation with the regional blood transfusion service. The basic idea is by no means new, but the system does not appear to be widely used. The electrical alarm system is so arranged that any potentially dangerous deviation from normal storage temperature causes a bell to ring continuously in the porter's lodge. The alarm signal can be stopped only by operating a switch on the refrigerator. Out of normal laboratory hours, one of the previously instructed porters on duty deals with the fault if he is able. If not, he consults a member of the hospital blood transfusion laboratory, who takes appropriate action. A common fault is simply the failure to close refrigerator doors after the removal of blood. The alarm systems have cost approximately £70, but already over the past few months we have probably saved 200 bottles of blood.—I am, etc.,

Sheffield. E. K. Blackburn.

Diabetes without Vascular Disorder after 25 Years

Sir,—On reading the letter concerning vascular changes in diabetes by Dr. G. M. Wauchope in the *British Medical Journal* (August 5, p. 368) I am impressed by her careful statements about a persistent high blood sugar and the relation of diabetes to vascular changes. It is important to emphasize that a persistent high blood sugar means that a harmful and disturbed condition of metabolism is present in the body cells and apparently that the cells particularly concerned in the structure of the arteries, arterioles, and capillaries are vulnerable to this disturbed metabolism.

At the annual meeting of the American Diabetes Association held at San Francisco on June 24, 1950, Dr. E. T. Bell, of Minneapolis, compared the pathology of 1,200 diabetic patients at necropsy with the pathology of 49,000 non-diabetic patients examined in the last 30 years in the pathological laboratory of the University of Minnesota. He pointed out the extraordinary frequency of arteriosclerotic lesions in the coronary arteries, the legs, and the kidneys in diabetics, especially when the diabetes was of long duration. He noted that arteriolar disease of advanced degree illustrated by the Kimmelstiehl-Wilson lesions is 100 times as common in diabetics as in non-diabetics.

In an analysis of 250 young diabetic patients by H. F. Root, R. H. Sinden, and R. Zanca (*Amer. J. digest. Dis.*, 1950, **17**, 179) we have summarized the results of careful *x*-ray examinations of these young patients after having diabetes 10 to 29 years. Few escaped some evidence of calcification or some retinal haemorrhages. Nevertheless we were able to show that young diabetic patients whose diabetes began under 30 years of age could be divided into two groups at the end of 20 years. Those who had practised fair control of diabetes showed retinal haemorrhages in only 18% of the series, whereas those whose diabetic control had been grossly irregular in spite of taking insulin showed retinal haemorrhages in 85% of the group.

A Quarter-century Victory Medal (illustrated below) is now offered by the Diabetes Fund (chairman, advisory committee, Dr. Elliott P. Joslin) at the Boston Safe Deposit and Trust Company in Boston to any diabetic patient who, having had proved diabetes for 25 years, is still free from *x*-ray evidence of calcified arteries, retinitis, albuminuria, hypertension, or other degenerative changes. Already 20 patients have won this medal. It would

be desirable for anyone who sees many diabetic patients living for more than 25 years without vascular complications to provide *x*-ray and chemical evidence of freedom from such changes in order that such a patient might receive the Victory Medal which is to be deposited in your editorial office.

One of the Quarter-century Victory Medals is being sent in the hope that you will be kind enough to give it to any diabetic patient proved to have true diabetes mellitus for more than 25 years who at the end of that time shows roentgenograms of the legs, the pelvis, and a lateral film of the abdominal aorta to be free from calcification, and who has no albuminuria, hypertension, retinitis, or other degenerative disease.—I am, etc.,

New England Deaconess Hospital, Boston, Massachusetts. Howard F. Root.

*** The kind offer of a Victory Medal referred to by Dr. Howard F. Root is discussed in an annotation at p. 827.—Ed., *B.M.J.*

POINTS FROM LETTERS

The Roots of All Evil

Dr. A. Lewis (London, W.9) writes: Your correspondents, Drs. Lennox Johnston and F. C. Morgan (September 9, p. 630) would be far less likely to find themselves in a minority crusade if they were a little less sweeping in their assertions. Few doctors could fail to join them in a campaign against *excessive* smoking, nor could many fail to agree that the inhalation of tobacco smoke is unlikely to do good to any kind of cough whatever its aetiology. But how far are Drs. Johnston and Morgan justified in announcing that failure to get rid of tobacco is probably the main cause of failure to get rid of tuberculosis? The pathogenicity, infectivity, and chronicity of tuberculosis depend on several factors, and the extent to which these may be affected by smoking may not be so great as they would have us believe. . . . Not satisfied with this, Drs. Johnston and Morgan go on to argue that, because of its bad effect on tuberculosis (which most of us admit) and because of other ill effects of excessive smoking, *all* tobacco smoking could (and should) be abolished to the advantage of the community. Perhaps it could. But it is only one of the so-called "evils" with which a civilized community indulges itself. I feel, for instance, that a strong case could be made against tea. . . . I have no doubt that Drs. Johnston and Morgan could if they tried bring a good case on a sound scientific basis for the abolition of kissing. But if they charged all who failed to join them with promiscuous lasciviousness they could hardly be surprised if their accusations were met with ribald cries of "Whack ho!". . . Until Drs. Johnston and Morgan can show that a little of what I fancy does me harm I hope the world will still find me willing to appreciate anything from a pipe and a glass of beer to a Havana cigar and a vintage brandy.

Congenital Malformation and Disease

Dr. Charles Schiff (London, E.8) writes: Dr. Paul Wood's St. Cyres Lecture (*Journal*, September 16, p. 639, and September 23, p. 693) is entitled "Congenital Heart Disease." Since faulty wording is apt to lead to faulty thinking, it is surely not pedantic to point out that the Lecture deals with various kinds of congenital heart malformation and not with disease.

Obituary

S. ROODHOUSE GLOYNE, M.D.

Dr. S. R. Gloyne, consulting pathologist to the London Chest Hospital and King Edward VII Sanatorium, Midhurst, died in London on September 25.

Stephen Roodhouse Gloyne studied medicine at Leeds University and the Middlesex Hospital. He graduated M.B., Ch.B. in 1906, took the D.P.H. from St. George's Hospital in 1908, and proceeded M.D. in 1909. He became pathologist to the London Chest Hospital in 1911, and remained on the staff of that hospital until his retirement two years ago. It was at St. George's Hospital that he met Mr. A. W. Smart, who joined him as senior laboratory technician in 1920, a partnership which lasted nearly 30 years. Gloyne was a recognized authority on the pathology of respiratory diseases, especially industrial diseases of the lung. With the late Dr. Burton Wood he reported on the effects of asbestos dust on the lungs, and he was made a member of the Medical Board for Silicosis and Asbestosis. He was also well known for his work on tuberculosis, being president of the British Tuberculosis Association in 1938. When the Thoracic Society was formed he was made a vice-president. In 1948 he was awarded the Weber-Parkes Prize by the Royal College of Physicians.

Dr. E. H. Hudson writes: "Old Gloyne" was a term of endearment by which Stephen Roodhouse Gloyne was known among his intimate friends and numbers of visitors from all parts of the world. His silver hair belied him—he was not old. His mind and actions were young, and he enjoyed youth's company. His unfailing cheerfulness and sage wisdom made many seek his counsel and seek his advice in committee too. A Yorkshireman, of Quaker upbringing, he was, as one would expect, a warm-hearted, generous character. His real attachment to Victoria Park seems to date from the 1914–18 war, when owing to the shortage of medical staff he came to live in the hospital and combined the duties of pathologist and resident medical officer. He became part and parcel of the hospital, and it is impossible to think of the two apart. He had a happy knack of making visitors feel at home, both in the hospital and laboratory, and if he saw a new resident ill at ease he would immediately break the ice and make him feel he was no foreign body. In the common-room at the hospital, where most of us will remember him, he had his special after-lunch seat at the end of the sofa, which we always left for him. At these times art, politics, cricket, literature, and medicine were all subjects for discussion, and all took part. He was a keen cricketer and a member of the M.C.C.; a true Yorkshireman, he followed his county with great interest. When war came again in 1939, with the staff sadly depleted through the deaths of Chandler and Burton Wood, Gloyne shouldered fresh responsibility. He was a moving spirit in preparing a country branch at Camberley for evacuation of the main hospital. When the hospital was badly bombed in 1941 his laboratory received a direct hit, and he saw a life's work disappear in a night; all his museum specimens, so laboriously gathered, all his personal papers, section blocks, and his new microscope of which he was so proud, vanished. He immediately organized a highly efficient temporary laboratory which is still functioning, and in spite of his great personal loss and anxiety he placed his country house at the disposal of the matron as a rest centre for the nursing staff. Gloyne was a most lovable man. He was a scholar with a great appreciation of beauty. We knew him to be a fine pathologist, and we shall always remember his merry infectious laugh.

H. de CARLE WOODCOCK, M.D., F.R.C.P.Ed.

Dr. H. de Carle Woodcock, who devoted a great part of his career to developing the tuberculosis service in Leeds, died on September 5 in Leeds aged 89 years.

Herbert de Carle Woodcock received his medical education at Leeds and Edinburgh Universities, at the Middlesex Hospital, and at the Johns Hopkins Hospital, Baltimore. He qualified in 1885 and soon afterwards went into general practice in an industrial part of Leeds. He continued his medical studies, however, taking the English Conjoint qualification in 1889, the D.P.H. in 1901, and the M.R.C.P.(Edinburgh) in 1911. In 1911 also he graduated M.D.(Durham), and in 1918 he became a Fellow of the Royal College of Physicians of Edinburgh. It was while he was in general practice that his attention was directed to the growing menace of tuberculosis and to the urgency of the need to alleviate the suffering of the victims and save from infection those who had to live in close contact with them, often in poverty and squalor. A crusade was started, and the Leeds Association for the Prevention and Cure of Tuberculosis was founded at the end of the last century. A public appeal for funds made it possible for two small sanatoria and a dispensary to be built. Woodcock, of course, was a member of the honorary medical staff, and into his self-appointed task he put his whole heart and soul, visiting sanatoria in Europe and America and acquainting himself with all the current literature. In Edinburgh, where Dr. Robert Philip had opened the first tuberculosis dispensary in Great Britain, he spent a considerable time, gaining valuable experience. He was constantly thinking out new methods of treatment, some of which still survive. In the first world war Woodcock brought his skill and judgment to the problems connected with recruitment and the treatment of infected men discharged from the Forces. He also took a leading part in founding a tuberculosis society for ex-Service men. When the Leeds Association for the Prevention and Cure of Tuberculosis was taken over by the corporation, Woodcock continued, as chief clinical tuberculosis officer, to devote much time to the work. He was an active member of the National Association for the Prevention of Tuberculosis and was president of the Tuberculosis Congress in 1929. He retired from active practice in 1934, when his sight failed.

J. J. J. writes: Dr. Woodcock built up a large practice in Leeds, and established himself so firmly in the affections of his patients and the public in general that long after he had left the district in which he practised his name remained a household word. As the tuberculosis work grew he found that he had to devote himself entirely to it and abandon general practice. This meant severing his connexion with many old patients and friends and giving up a lucrative source of income, but to a man with his burning zest no sacrifice was too great. He was interested in many branches of social work, indeed in anything that would build up a resistance against "the enemy" he had sworn to defeat. A convincing speaker, a clear and original thinker, and a facile writer, he could be a charming companion and conversationalist. His knowledge of general as well as medical literature was extensive. Besides many articles in magazines and newspapers he was the author of a book, *The Doctor and the People*, which gave a fascinating picture of life in

a working-class district. In his home life he was extremely happy; he kept open house in his younger days, and was never happier than when he had young people around him. The staff of the Leeds Dispensary loved him as a father and would do anything to serve him. He treated them with the greatest generosity. Progress in science owes much to the pioneers. They get very little recognition, at least from their own generation, and no reward. Woodcock was a pioneer, one of a number who in the first half of this century blazed the trail in the field of tuberculosis in this country. He laboured better than he knew, and his successors have entered into his labours.

A. E. N. writes: I had known Dr. Woodcock for nearly 50 years. This was a privilege which I appreciated increasingly as the years went by; and especially so for the last 20 years when old age and blindness had severed for him the normal contacts of a physician. It was then that the essential qualities of his mind stood out undisturbed by the daily cares of competitive work. There are few who wholly escape the mental rigidities of the eighth and ninth decades of life. Dr. Woodcock was one of them. As the years rolled on a larger proportion of each day was spent in sleep, but when awake he was wholly so—as mentally agile in current affairs, in literary discrimination, and in philosophical outlook as ever he had been. Though completely blind for over 10 years, he could seize on the character and mental outlook of a stranger within a matter of minutes from the time of his first introduction. After a single reading to him of an hour's essay or treatise he had summed it up in detail and made a close estimation of its value.

Dr. James Stewart Jowett Lee died suddenly at his home in Belfast on August 3. He studied medicine at Queen's University, Belfast, and graduated M.B., B.Ch. in 1920. He took the D.P.H. in 1922. Before going into practice Dr. Lee was senior demonstrator in physiology and demonstrator in pathology at Queen's University. A member of the Ulster Medical Society and the British Medical Association, he was keenly interested in the work of the Association in Belfast. During the air raids on Belfast in 1941 he did excellent work in a first-aid post in one of the most heavily damaged areas of the city. James Lee was a good doctor, and his tragically sudden death came as a great shock to his patients and colleagues in North Belfast. He leaves a widow and three young children.—F. W. M.

Dr. Ringland Gilmore Boyd, senior assistant medical officer of health for Gloucestershire, was killed in a road accident on August 17. He was a member of a well-known family in County Derry, Northern Ireland, and was educated at Coleraine Academy and Queen's University, Belfast. He graduated M.B., B.Chir. in 1941, and after joining the R.A.M.C. he served with distinction in Africa, Sicily, and Italy. He was awarded the Military Cross in 1942. After attaining the rank of lieutenant-colonel, he was demobilized in 1947. Returning to Belfast, he took the D.P.H. and entered the public health service as an assistant M.O.H. in Manchester. Later he moved to Gloucestershire, and was appointed senior assistant county medical officer as recently as last April. A very skilful tennis player, Boyd had many successes in tournaments in Gloucester, Cheltenham, Cirencester, and Ledbury. He won the tennis championship at Gloucester last year and again this year. He was also an outstanding badminton player. He had charm without being effusive, and great ability with modesty. He had also a strong belief in the principles of freedom, honourable human relationships, and justice. As a sportsman he was outstanding, and as a friend loyal and dependable. He was highly thought of by senior and junior colleagues, and it is a tragedy that he should be killed on the road during the ordinary course of his duties after having withstood the perils of active service in war.—J. K. M.

Dr. Jacques de Fourmestraux, director of the surgical clinic at Chartres, was killed recently in a road accident. We are indebted to Mr. H. W. S. Wright for the following appreciation:

British surgeons who are members of the French and British Associations of Surgeons will share with their French colleagues the sense of loss which comes to European surgery with the death of Jacques de Fourmestraux. Those who attended the French Congress of Surgery in 1947 will remember its president, and those who were at the Association of Surgeons meeting in London in 1946 and Oxford in 1947, and at the International Congress in London in the same year, will recollect a massive, dark Frenchman, hair brushed back, with a dark upturned moustache. At first sight perhaps a cheerful farmer up from the country, but then one glance at his kindly, intelligent, widely set apart eyes above the firm chin and humorous mouth showed that here was no ordinary man. He was born in 1879, and after a brilliant career in Paris, where he was à pupil of de Picqué and de Berger, his sense of adventure led him away from Paris to Chartres, where he organized a surgical clinic which might well be the envy of many university towns. He was a general surgeon in the best and highest sense of the word, and his writings range over the whole realm of surgery. I think he was the first man in Paris to suture a wound of the heart, an operation which he performed in 1905. He was, moreover, an authority on the history of French medicine and the author of a standard work on the history of French surgery. At home de Fourmestraux was a sort of uncrowned king of Chartres. From cathedral and cottage, from *préfecture* and farmhouse, they all came to seek his help. No trouble was too small for his consideration, and no call on his wisdom and sympathy ever went unanswered. Above all things he had a genius for friendship, and no one with whom he shared his greatness of heart and spirit will ever forget him. I sat with him last June for an hour in a café in Brussels; he talked with wisdom and wit about the origin of place names in central France, about speed in surgery, about his farm, and then, with a far-away look which seemed to come from the past and go towards the dim horizons of the future, he said with great delight: "At last I have managed to get a suite of rooms in my clinic for any surgeon who cares to come. I like to have young people visit me nowadays; I think that is the best way I can help. The world is too complicated for one man to do much." Our sympathy goes out to his wife and his family.

A memorial service for the late Dr. Herbert Morley Fletcher, who was senior consulting physician to St. Bartholomew's Hospital, will be held in the church of St. Bartholomew-the-Great on Wednesday, October 11, at 12.30 p.m.

Medical Notes in Parliament

Smoke Abatement

Mr. F. Longden raised, on September 19, the problem of smoke abatement. He recalled that the Minister of Health had said in 1949 that he contemplated introducing no legislation on the subject. But from Birmingham, which had some 6,000 factories with more than 24,000 chimney-stacks, the chief medical officer told him that in 1948–9, of two standard atmospheric-pollution-deposit gauges, the central one had recorded a total deposit of 330.9 tons per square mile, while a similar gauge on the south-west boundary in West Heath had recorded a total deposit of 191.5 tons per square mile during the year. The inspector of factories for Birmingham told him that the insoluble deposits consisted mainly of mineral matter, grit, ash, soot, and tar, while the soluble deposits were mainly of sulphates, chlorides, calcium, and sodium salts. In the opinion of the inspector about 60% of the pollution was from industrial sources. Every medical officer must know that the effects on health must be bad, particularly in the matter of lung troubles such as bronchitis, pneumonia, and cancer. There was a need for more powers for local authorities to employ inspectors and for stricter control and severer penalties for deliberate evasion. The

Birmingham inspector referred to pollution caused by emission of fumes from processes such as brass casting, aluminium melting, scrap-metal recovery, and enamelling ovens. He himself had worked in an iron foundry where fumes got into the nose, eyes, and lungs. He asked whether, if legislation could not be contemplated, there could not be more intense investigation and administration to reduce this waste of health and wealth.

Dr. BARNET STROSS, as a medical man, remarked that there was something to be said for the contention that the higher incidence of carcinoma of the bronchial tubes now found in elderly people might result from the tarry deposits inhaled from the atmosphere.

Mr. A. BLENKINSOP, replying for the Ministry of Health, said local authorities had fairly wide powers and in most cases controlled emission of black smoke. Over pollution from chemical works the Ministry of Health had direct responsibility under the Alkali Acts and could take direct action. Local authorities were active in using their powers, but were often defeated by the general anxiety to secure full production. The Ministry of Health with the Ministry of Fuel and Power, was doing all it could to secure training in better stoking and to secure more efficient plant. Powers had been taken in some towns to provide for smokeless zones where, after proper notice, it would be a punishable offence to create smoke. As these smokeless areas were gradually extended, some steady improvement would be seen.

National Service

When asked on September 19 whether National Service men due to enter a university in October would be exempted from a further six months' service under the National Service Act which had become law on the previous day, the Minister of Labour said arrangements had been made for the early release of the men concerned. Applications should be made through the ordinary Service channels. These men would be discharged at the end of their 18 months' service and would not be liable for another six months' service.

In reply to another question, he said that all men attending for medical examination under the National Service Acts were asked to give the Medical Board full details of their medical history. Any certificates from general practitioners or consultants that a man might produce received full consideration.

Welfare Foods.—The stocks of welfare foods in distribution in the United Kingdom at the end of the July accounting period, 1950, were: National dried milk, 3,987,000 tins against 2,959,000 tins in 1945; cod-liver oil, 2,485,000 bottles against 1,955,000 in 1945; vitamin A and D tablets, 585.000 packets against 405,000 in 1945; and orange juice, 6,830,000 bottles against 4,184,000 in 1945.

Universities and Colleges

UNIVERSITY OF MANCHESTER

Dr. Kathleen V. Lodge has been appointed demonstrator in pathology.

Dr. Stanley Wyatt (lecturer in occupational health), Dr. G. W. Boden (assistant lecturer in radiotherapy), and Dr. J. K. Craig (demonstrator in physiology) have resigned the posts indicated in parentheses.

UNIVERSITY OF SHEFFIELD

At a Congregation held on September 23 the following degrees were conferred.

M.B., CH.B.—H. Bailey, Patricia T. Ferraro, W. E. Freeman, L. G. Gordon, Shelagh Hannath, E. A. Johnson, F. E. Neal, N. L. Sarkar, J. D. Warren.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Dr. Philip S. Hench, of the Mayo Clinic, Rochester, U.S.A., will deliver the inaugural Walker Trust Lecture entitled "The Effect of Cortisone and A.C.T.H. on Rheumatic Diseases" in the Hall of the Faculty (242, St. Vincent Street, Glasgow) on Monday, October 16, at 4 p.m. Admission is by ticket, which may be obtained free of charge on application to the secretary of the Faculty.

No. 37

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 16.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1950 (a)	(b)	(c)	(d)	(e)	1949 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Meningococcal infection	28	4	13	2	—	34	2	25	4	—
Deaths		—	—				—	—		
Diphtheria	37	6	10	2	3	78	10	30	6	5
Deaths	—	—	—	—	—	1	—	—	—	—
Dysentery	215	10	94	1	—	86	7	54	1	2
Deaths		2			—				—	—
Encephalitis, acute	11	1	1	1	—	1	—	—	—	—
Deaths		—		—			—			
Erysipelas			21	8	2			27	2	1
Deaths							—			
Infective enteritis or diarrhoea under 2 years				28	13				142	
Deaths	12		3	2	1	27	—	11	16	4
Measles*	2,494	146	80	35	45	688	42	40	48	40
Deaths†		—	2	—	—			1	1	—
Ophthalmia neonatorum	52	9	7		—	54	12	6	—	—
Deaths										
Paratyphoid fever	11	1	—		—	18	1	5 (B)	2 (B)	—
Deaths	—		—		—	—	—	—	—	—
Pneumonia, influenzal	218	14	1		1	211	10	2	1	2
Deaths (from influenza)‡	1	—	—	—	—	6	—	—	—	—
Pneumonia, primary			128	¶				85	10	
Deaths	108	11		6	4	116	18		9	3
Poliomyelitis, acute	478	29	77	3	24	342	41	8	3	3
Deaths§	23	2		—		20	2			
Puerperal fever			6				—	10		
Deaths										
Puerperal pyrexia‖	87	7	8		—	118	9	4	—	2
Deaths							—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	750	49	148	51	47	942	75	132	62	96
Deaths†		—	—	—	—			—	—	—
Smallpox	—	—	—		—	—	—	—	—	—
Deaths					—				—	—
Typhoid fever	8	2	3	2	—	4	1	1	2	—
Deaths	1	—	—		—	—	—	—	—	—
Typhus fever	—	—	—	—	—	4	—	—	—	—
Deaths					—				—	—
Whooping-cough	3,086	267	186	65	19	1,180	48	75	33	45
Deaths	8	2	—	1	—	1	—	—	—	—
Deaths (0–1 year)	193	24	31	16	8	225	26	49	36	15
Deaths (excluding stillbirths)	4,074	627	492	158	105	3,702	567	482	162	88
Annual death rate (per 1,000 persons living)			9·9					9·7	10·0	
Live births	6,602	1056	828	431	213	7,099	1098	891	373	225
Annual rate per 1,000 persons living			16·6					17·9	23·1	
Stillbirths	179	21	23			188	17	27		
Rate per 1,000 total births (including stillborn)			27					29		

* Measles is not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

¶ Primary pneumonia no longer notifiable in Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

Notifications of poliomyelitis in the week ending September 23 were: paralytic, 268 (291); non-paralytic, 151 (187); total, 419 (478). The figures for the previous week are in parentheses. For the second successive week there has been a decided fall in the total number of cases. Non-paralytic cases were 36% of the total during the week under review.

Decreases were fairly widespread, but were more marked in counties heavily affected earlier in the year. Stafford and Gloucester had 13 fewer cases than during the previous week; Worcester 11 fewer and Warwick 10 fewer. Material increases were shown in Kent and Northumberland with 9 more cases each. Surrey had an increase of 7 cases and Lancashire one of 6 cases.

The uncorrected notifications for the corresponding week in 1947, 1948, and 1949 were 594, 73, and 295 respectively. Total uncorrected notifications for 1950, up to and including the week under review, were 6,023. The corresponding figures for 1947, 1948, and 1949 were 6,192, 1,361, and 3,284.

Discussion of Table

In *England and Wales* a fall occurred in the number of notifications of whooping-cough 596, measles 36, and acute poliomyelitis 35; a rise was reported for scarlet fever 92, acute pneumonia 26, and dysentery 10.

The largest variation in the local trends of scarlet fever was a rise of 27 in Yorkshire West Riding. A decline in the incidence of measles was reported throughout the country; the outstanding exceptions were rises in Lincolnshire 184 (due to a big outbreak in Spalding U.D.) and Yorkshire West Riding 76. The largest returns of diphtheria during the week were those of Bootle C.B. and Birmingham C.B., with 4 notifications each. The largest falls in the notifications of whooping-cough were from Warwickshire 75 and Middlesex 67, and the most notable exception to the general downward trend was a rise of 20 in Staffordshire.

The chief centres of dysentery were Lancashire 55 (Droylsden U.D. 11, Great Harwood U.D. 10); Leicestershire 49 (Leicester C.B. 42); Yorkshire West Riding 32 (Shipley U.D. 10, Bradford C.B. 7); Durham 14 (South Shields C.B. 8); Surrey 13 (Coulsdon and Purley U.D. 10); and London 10.

The chief features of the returns for acute poliomyelitis were a rise in the South-west counties of 13 and a rise of 12 in Worcestershire. The largest returns were from Lancashire 35 (Liverpool C.B. 15, Manchester C.B. 13); Gloucestershire 31 (Bristol C.B. 25); Staffordshire 30 (Rowley Regis M.B. 4); London 29 (Islington 4, Southwark 4); Warwickshire 25 (Birmingham C.B. 14, Coventry C.B. 7); Middlesex 24 (Harrow U.D. 4); Yorkshire West Riding 24 (Sheffield C.B. 7, Leeds C.B. 4, York C.B. 4); Durham 23 (distributed over 15 areas); Essex 16 (Walthamstow M.B. 4); Worcestershire 16 (Dudley C.B. 5); Devonshire 15 (Newton Abbot R.D. 4); Dorsetshire 14; Kent 14 (Orpington U.D. 5); Lincolnshire 12 (Grimsby C.B. 5); Nottinghamshire 11 (Nottingham C.B. 4); Southampton 11 (Bournemouth C.B. 4); Leicestershire 10; and Somerset 10.

In *Scotland* a fall occurred in the number of notifications of whooping-cough 125 and measles 16; a rise was recorded for scarlet fever 21. The notifications of scarlet fever fell by 10 in the Western area, but a small rise occurred in the other areas. The largest returns of dysentery were from Glasgow 39, Stirling county 20, and Edinburgh 12. Very little change occurred in the geographical distribution of acute poliomyelitis; the largest returns were from Glasgow 16, Fife county 11, Dundee 7, Lanark county 7, and Edinburgh 4.

In *Eire* decreases were recorded in the number of notifications of measles 36 and whooping-cough 33; a rise of 10 occurred in the notifications of diarrhoea and enteritis. A fall in the incidence of measles and whooping-cough was general throughout the country, while the rise in diarrhoea and enteritis was confined to Dublin C.B.

In *Northern Ireland* a rise of 13 occurred in the number of notifications of measles, and a fall of 12 was reported for whooping-cough. An increase of 10 was recorded for the notifications of acute poliomyelitis. The largest returns for acute poliomyelitis were from Antrim county 8, Down county 7, Belfast C.B. 5, and Armagh county 3.

Week Ending September 23

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 771, whooping-cough 2,935, diphtheria 38, measles 2,673, acute pneumonia 260, acute poliomyelitis 419, dysentery 170, paratyphoid fever 9, and typhoid fever 3.

Medical News

W.H.O. Mission to Korea

The World Health Organization has appointed a special mission to Korea to assist in the administration of health and relief programmes for the civilian population. The director of the mission, Dr. W. H. Crichton, C.I.E., has already left to assume his new post. He will be assisted by five public health teams composed of medical officers and sanitary engineers now being recruited by W.H.O. in Europe, South America, and the United States. The W.H.O. mission to Korea will be put at the disposal of the unified command and will assist the South Korean Ministries of Public Health and Social Welfare. The mission will help to reorganize health services for the population and assist in relief programmes and in the control and prevention of communicable diseases.

Neurosurgical Congress in Bologna

Dr. A. J. H. Hewer, consulting anaesthetist to the Middlesex Hospital, visited Italy between September 26 and October 3 to read a paper on anaesthesia with special reference to neurosurgery at a congress of neurosurgeons at Bologna. The visit was sponsored by the British Council.

Visits to Finland

Professor R. Cruickshank, of the Wright-Fleming Institute, St. Mary's Hospital, London, gave three lectures for the British Council in Finland between September 17 and 21. At the University of Helsinki he spoke on "The Chemotherapy of Tuberculosis," to the Society of Pathologists in Helsinki on "The Epidemiology and Control of Whooping-cough," and to the medical faculty of the University of Turku on "Modern Antibiotic Therapy."

Another visitor to Helsinki, during the fortnight September 11 to 26, was Miss E. M. Crothers, general superintendent of the Queen's Institute of District Nursing, who lectured and demonstrated on home nursing methods at the invitation of the Finnish State Medical Board.

Visit to Yugoslavia

Dr. Marc Daniels, of the M.R.C. Tuberculosis Research Unit, spoke in Belgrade and other Yugoslav centres on "The Chemotherapy of Tuberculosis" and "The Epidemiology of Tuberculosis" between September 22 and October 6 on behalf of the British Council.

Vellore Christian Medical College

The Golden Jubilee celebrations of the Christian Medical College at Vellore, South India, are being celebrated in London on October 12. The college has recently been granted permanent affiliation to the University of Madras, and is the only Christian medical college in India and Pakistan where men and women can take the M.B., B.S. degree. It is also the only university school of nursing in South India. The hospital has 468 beds, with a staff of 60 doctors and 120 nurses, and it offers a complete medical service. A valuable side of the hospital's work is its rural medical service: mobile dispensaries go out weekly, treating on each trip up to 300 patients. At present there are over 160 students in the medical school, which has many Europeans on the teaching staff. At a medical

meeting, which is to be held in the Caxton Hall, Westminster, on October 12 at 5.30 p.m., the chair will be taken by Sir George McRobert, former professor of medicine, Madras College, and speakers will include Sir Henry Holland, C.I.E., and Drs. J. Donald Ball and Leela Chacko. A coloured film showing the work of the college will be shown before the medical meeting at 5 p.m. Application for afternoon tea tickets should be addressed to the Secretary, "Friends of Vellore," Annandale, North End Road, London, N.W.11.

R.C.O.G. Dinner

The annual dinner of the Royal College of Obstetricians and Gynaecologists was held at the Dorchester Hotel on September 29, when the president of the College, Professor Hilda Lloyd, was in the chair. The large number of distinguished guests included the Lord Mayor of London, Sir John Anderson, and the vice-chancellor of the University of London.

In proposing the health of the College, Sir John Anderson said it gave him special pleasure to be invited as the chief guest, because as chairman of the Postgraduate Medical Federation he was concerned with advanced medical education. Responsibility for higher medical education was shared between the universities and the royal colleges. The federation was encouraging the recognition by the universities of a series of specialist institutes for postgraduate teaching. One of these was the Institute of Obstetrics and Gynaecology, founded in 1948 and based on the Hammersmith Hospital, Queen Charlotte's Maternity Hospital, and the Chelsea Hospital for Women. Co-ordination of these activities was met by a representation of the colleges on the governing body of the Postgraduate Federation and also by the establishment of a joint board. The Royal College of Obstetricians and Gynaecologists was responsible for the standards of consultants in these subjects, and its sphere extended to all parts of the Commonwealth. It had no responsibility comparable with the older colleges for undergraduate training. Through its diploma of membership the College had influenced higher medical education substantially in respect of clinical practice. Referring to finance, Sir John observed that the colleges had to depend on their own resources. So long as this was the case they could claim a degree of independence not consistent with reliance on Exchequer grants. Such independence was important and valuable, and he hoped that the time was not far distant when the College could command resources comparable, in relation to their needs, to those at the disposal of the older colleges.

In response, Professor Hilda Lloyd welcomed new fellows and members, and in particular those from the Dominions. She referred appreciatively to the three years of office held by Sir William Gilliatt and the work he had done to raise the status of the College. Their facilities for research were restricted for lack of funds. But they were making some headway. £60,000 had been raised by the appeal fund organized by the College. Sir Arthur Sims and his family had given funds to establish a Commonwealth Travelling Professorship tenable every other year. The Bernhard Baron trustees had given £10,000 towards travelling scholarships. These gifts had brought their funds within the region of £100,000. Professor Hilda Lloyd mentioned that the Royal College of Obstetricians and Gynaecologists now had a seat on the G.M.C. They also had regional councils in New Zealand, Canada, and Australia.

The health of the guests was proposed by Mr. G. F. Gibberd and responded to by Dr. W. Russell Brain, the president of the Royal College of Physicians.

King's College Hospital Medical School

The annual dinner of King's College Hospital Medical School was held at Claridge's Hotel on September 30 with Sir Cecil Wakeley, P.R.C.S., in the chair. The toast to the medical school was proposed by Dr. Lawrence Dulake, who spoke as a general practitioner looking back on the value of the training given to him. The main object of a medical school was to turn out good doctors—not special kinds of doctors. The medical school, in fact, concentrated on basic training. When the speaker was a student he and his contemporaries thought the curriculum was good, but he believed it was far better to-day. In his experience psychosomatic disturbances accounted for 60% of the G.P.'s work, and it would be a great step forward in the training of students when full emphasis was given to psychiatric considerations. Dr. Dulake expressed confidence in the future of King's, which was safe in the hands of the present staff and of the King's men and women who were scattered about the world. In his reply Mr. Harold Edwards, the dean of the medical school, said that the intake of students was still rising. With three London University gold medallists they had had a fine year of academic successes. The need for more beds was as great as ever, and at last there did seem to be some hope that building would be begun. In proposing the health of the chairman, Dr. F. S. Cooksey said that Sir Cecil Wakeley was the ninth old King's man to be president of the Royal College of Surgeons. His contributions to surgery, to his medical school, to the Royal Naval medical service, and to his own great college were outstanding. Sir Cecil Wakeley, replying, said that it was just after the first world war that the first lecture by a G.P. was given to King's students. On the whole he thought that the clinical acumen of physicians in the Victorian age was probably better than it is to-day. In some important things the student did not now acquire the knowledge his predecessors acquired 20 or 30 years ago. He earnestly hoped that it would never be the common practice in this country for students to be examined by their own teachers only. This would not be for the good of the profession.

COMING EVENTS

Lectures on Ophthalmology

A series of four lectures on ophthalmology began in the Department of Ophthalmology of the University of Glasgow on October 4, when Dr. Fergus Campbell spoke on "Experimental Corneal Lesions." Further lectures will be given on October 11, 18, and 25, details of which will be published in the "Societies and Lectures" column of the *Journal*.

Fellowship of Postgraduate Medicine

The Fellowship of Postgraduate Medicine, 1, Wimpole Street, London, W., has arranged a concentrated practical week-end course in the "Rheumatic Diseases" with clinical lectures, practical demonstrations, and ward rounds at the Rheumatism Unit, St. Stephen's Hospital, Fulham Road, London, S.W., on Saturday and Sunday, October 7 and 8. The programme is as follows: October 7, 10 a.m., introductory address by the Rt. Hon. Lord Amulree, "The Social and Economic Aspects of the Chronic Rheumatic Diseases"; 11 a.m., Dr. Peter Bishop, "The Endocrine Aspects of the Chronic Rheumatic Diseases"; 12 noon, Dr. Philip Ellman, "Rheumatoid Disease—its Widespread Clinical Manifestations"; 2 p.m., Dr. Francis Bach, "The Management of the Rheumatic Patient"; 3 p.m., Dr. Francis Bach and the medical registrars, demonstration of methods of physical treatment and rehabilitation; 4.30 to 5.30 p.m., Dr. E. G. L. Bywaters, "Pathology of the Chronic Rheumatic Diseases." October 8, 10 a.m., Dr. Philip Ellman and the medical registrars, ward round with demonstration of cases; 11.15 a.m., Dr. Philip Ellman, "Joint Lesions in General Medicine"; 12 noon, Dr. David Shaw, "Psychiatric Factors in the Chronic Rheumatic Diseases"; 2 p.m., Mr. Timbrell Fisher, "Orthopaedic Aspects of Rheumatic Disease and the Prevention and Treatment of Deformities"; 3 p.m., Mr. Timbrell Fisher, demonstration of cases and treatment by manipulation (if cases are available); 4.30 to 6 p.m., lantern lecture by Dr. Grace Batten, "The Radiological Diagnosis of the Rheumatic Diseases." The fee for the course, open only to members of the Fellowship of Postgraduate Medicine, is £2 12s. 6d. payable in advance to the Fellowship of Medicine. Lunch will be provided at the hospital and is included in the fee.

British Postgraduate Medical Federation Lectures

The series of lectures on "The Scientific Basis of Medicine" arranged by the British Postgraduate Medical Federation will begin on Tuesday, October 10, and will continue until Tuesday, March 20, 1951. Lectures will be given at 5.30 p.m. on Tuesdays and Thursdays at the London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C.

Admission is free without ticket. The programme for the period October 10 to December 21 will be found in the advertisement columns. Details will be published in the "Societies and Lectures" column of the *Journal* week by week.

Royal Institute of Philosophy

The 1950–1 programme of lectures of the Royal Institute of Philosophy has been arranged as follows: October 13, 20, and 27, and November 3, a course of four lectures on "Synoptic Philosophy (A Philosophy of Nature)," by Mr. G. J. Whitrow, D.Phil.; November 10, "Aristotle's Doctrine Concerning the Connexion of Soul and Body," by Mr. W. F. R. Hardie; November 17, "The Notion of an Imperative in Morality and Elsewhere," by Professor C. D. Broad; November 24, "The Nature of Aesthetic Experience," by the Earl of Listowel; January 26 and February 2, 9, and 16, a course of four lectures on "The Philosophy of Mind and Value," by Mr. A. J. T. Wisdom; February 23, "The Nature of Religious Knowledge," by the Very Rev. W. R. Matthews (Dean of St. Paul's Cathedral); and March 2, "The Function of Art in Civilization," by Mr. Stanley Spencer. The lectures will be delivered at University Hall, 14, Gordon Square, London, W.C., at 5.15 p.m.; they are open to the public, and tickets of admission may be obtained, free of charge, from the director of studies of the institute.

Neurological Diseases in Children

The Institute of Child Health (Hospital for Sick Children, Great Ormond Street, London, W.C.) in conjunction with the Institute of Neurology (National Hospital, Queen Square, London, W.C.) has arranged a series of 10 lectures on "Neurological Diseases in Children" to be given at the Institute of Neurology, National Hospital, on Mondays from October 16 to December 18 at 5 p.m. There is a fee for the lectures, and tickets will be issued in advance. Details will be published in the "Societies and Lectures" column of the *Journal* week by week.

27th General Hospital

A reunion dinner of the 27th General Hospital will be held at the Eccleston Hotel, Eccleston Square, London, S.W., on Saturday, October 21, at 6.30 for 7.15 p.m., when Lieutenant-Colonel Colin Wilson will preside. Tickets (inclusive) £1; informal dress. Inquiries should be addressed to Dr. L. S. Potter, B.M.A. House, Tavistock Square, London, W.C.1.

I.B.P. Medical Group Conference

The Medical Group of the Institute of British Photographers is holding a one-day conference on Saturday, October 28, 1950, at the Polytechnic, Regent Street, London, W.1, which will include a demonstration of cavity photography by Mr. F. Wardlaw, of Manchester, a lecture-demonstration on "Autostereoscopic Photography and Radiography," by Mr. L. P. C. J. Dudley, and the showing of two films, one on "Carcinoma of Fauces Treated by Beam-directed *X* Rays," by Mr. J. Larway, of Sheffield, and the other on "Examination of the Cervical Lymph Nodes," presented by Dr. Peter Hansell, of the Westminster Hospital. The conference is open to all interested in medical photography, and tickets (price 12s. 6d.) can be obtained from the secretary, Institute of British Photographers, 49, Gordon Square, London, W.C.1.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Friday

ROYAL MEDICAL SOCIETY, 7, Melbourne Place, Edinburgh.—October 6, 8 p.m., "*The Use of Radioactive Isotopes in Science and Industry*," inaugural address by Sir Edward Appleton.

Monday

EDINBURGH UNIVERSITY.—At Surgery Lecture Theatre, University New Buildings, Edinburgh, October 9, 5 p.m., "*The Indications for Surgery in Peptic Ulcer*," Macarthur postgraduate lecture by Mr. Norman C. Tanner.

INSTITUTE OF OPHTHALMOLOGY (UNIVERSITY OF LONDON), Judd Street, London, W.C.—October 9, 5.30 p.m., "*The Anatomy of the Ocular Muscles*," by Dr. F. Stansfield.

INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, London, S.E.—October 9, 4.30 p.m., lecture-demonstration for postgraduates by Dr. E. Stengel.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, Cavendish Square, London, W.—October 9, 8.30 p.m., annual general meeting; 8.45 p.m., "*Occultism in the Days of Lettsom*," presidential address by Dr. A. H. Douthwaite.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—October 9, 5 p.m., "*Surgery of the Pancreas*," by Professor C. F. W Illingworth; 6.15 p.m., "*The Nodular Breast*," by Mr. Hedley Atkins.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND: FACULTY OF ANAESTHETISTS, Lincoln's Inn Fields, London, W.C.—October 9, 10 a.m., "*Blood Transfusion*," by Dr. H. F. Brewer; 11.30 a.m., "*Lumbar Puncture and Spinal Anaesthesia*," by Dr. H. W. C. Griffiths; 2.30 p.m., "*Blood Transfusion*," by Dr. H. F. Brewer; 4 p.m., "*Lumbar Puncture and Spinal Anaesthesia*," by Dr. H. W. C. Griffiths.

Tuesday

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., October 10, 5.30 p.m., "*Scientific Method in Medical Research*," by Sir Henry Dale, O.M., F.R.S.

CHELSEA CLINICAL SOCIETY.—At South Kensington Hotel, 47, Queen's Gate Terrace, London, S.W., October 10, 7 for 7.30 p.m., "*Plastic Surgery and the Arts*," discussion to be opened by Mr. Adrian Hill and Mr. Henry E. Blake.

EDINBURGH UNIVERSITY.—At Surgery Lecture Theatre, University New Buildings, Edinburgh, October 10, 5 p.m., "*Operative Methods in the Treatment of Peptic Ulcer*," Macarthur postgraduate lecture by Mr. Norman C. Tanner.

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—October 10, 5 p.m., "*Eczema and/or Dermatitis*," by Dr. J. E. M. Wigley.

LONDON UNIVERSITY.—At Westminster Medical School (Meyerstein Lecture Theatre), Horseferry Road, Westminster, London, S.W., October 10, 5.30 p.m., "*Nature and Properties of Certain Metalloprotein Enzymes*," by Professor D. Keilin, F.R.S.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—October 10, 5 p.m., "*Congenital Abnormalities of the Foot*," by Mr. John Bruce; 6.15 p.m., "*Intracranial Suppuration*," by Sir Hugh Cairns.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND: FACULTY OF ANAESTHETISTS, Lincoln's Inn Fields, London, W.C.—October 10, 10 a.m., "*Absorption Technique*," by Dr. W. Mushin; 11.30 a.m., "*Volatile Anaesthetics*," by Professor R. R. Macintosh; 2 p.m., "*Anaesthesia in Children*," by Dr. R. W. Cope; 3.30 p.m., "*Volatile Anaesthetics*" by Professor R. R. Macintosh, 5 p.m., "*Anaesthesia in Children*," by Dr. R. W. Cope.

UNIVERSITY COLLEGE.—At Anatomy Theatre, Gower Street, London, W.C., October 10, 1.15 p.m., "*Human Biology as an Academic Topic*," by Professor J. B. S. Haldane, F.R.S.

Wednesday

EDINBURGH UNIVERSITY.—At Surgery Lecture Theatre, University New Buildings, Edinburgh, October 11, 5 p.m., "*Treatment of the Complications of Peptic Ulcer*," Macarthur postgraduate lecture by Mr. Norman C. Tanner.

GLASGOW UNIVERSITY.—In Department of Ophthalmology, October 11, 8 p.m., "*Clinical Investigations with Aureomycin*," by Professor W. J. B. Riddell.

●INSTITUTE OF DERMATOLOGY, Lisle Street, Leicester Square, London, W.C.—October 11, 5 p.m., "*X-ray Technique*," by Dr. C. W. McKenny.

LONDON UNIVERSITY.—At London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C., October 11, 5.30 p.m., "*The Development of Modern Renal Physiology*," by Professor Homer W. Smith (New York).

●ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, London, W.C.—October 11, 5 p.m., "*Femoral Hernia*," by Mr. Peter McEvedy; 6.15 p.m., "*Tuberculous Cervical Glands*," by Mr. C. J. B. Murray.

●ROYAL COLLEGE OF SURGEONS OF ENGLAND: FACULTY OF ANAESTHETISTS, Lincoln's Inn Fields, London, W.C.—October 11, 10 a.m., "*Volatile Anaesthetics*," by Professor R. R. Macintosh; 11.30 a.m., "*Intravenous Anaesthesia*," by Dr. A. H. Galley; 2.30 p.m., "*Intravenous Anaesthesia*," by Dr. A. H. Galley; 4 p.m., "*Choice of Anaesthetic*," by Dr. J. H. T. Challis.

ROYAL MEDICAL SOCIETY.—At 26, Chalmers Street, Edinburgh, October 11, 7.30 p.m., clinical meeting.

ROYAL SANITARY INSTITUTE, 90, Buckingham Palace Road, London, S.W.—October 11, 2.30 p.m., symposium: "*The Care of the Aged Healthy, the Aged Infirm, and the Aged who are Chronically Sick*," by (*a*) Dr. H. L. Glyn Hughes, (*b*) Dr. G. S. Wigley, (*c*) Sir Edward Bligh, and (*d*) Dr. F. R. O'Shiel.

SOCIETY OF CHEMICAL INDUSTRY: FOOD GROUP.—At Medical Society of London, 11, Chandos Street, Cavendish Square, London, W., October 11, 3 p.m., meeting of Microbiological Panel. Symposium: "*Air Disinfection and Sterilization*." Papers by Mr. C. E. Coulthard, Dr. O. M. Lidwell, Dr. R. E. O. Williams, Dr. A. Parker and Mr. G. B. Cherry, and Mr. F. E. S. Wright. Dr. R. B. Bourdillon will open a discussion.

SOUTH-WEST LONDON MEDICAL SOCIETY.—At Bolingbroke Hospital, Wandsworth Common, London, S.W., October 11, 8.30 p.m., "*Vascular Disorders of the Feet*," by Mr. A. M. Desmond.

Thursday

British Postgraduate Medical Federation.—At London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, W.C., October 12, 5.30 p.m., *"Fat Soluble Vitamins and Bone Formation,"* by Sir Edward Mellanby, F.R.S.

●Institute of Dermatology, Lisle Street, Leicester Square, London, W.C.—October 12, 5 p.m., *"Pathology,"* by Dr. J. O. Oliver.

Institute of Psychiatry, Maudsley Hospital, Denmark Hill, London, S.E.—October 12, 3 p.m., *"The Nature of the Nerve Impulse,"* by Dr. B. Katz.

North-East London Clinical Society.—At Prince of Wales's General Hospital, Tottenham, N., October 12, 8.15 p.m., *"Thrombosis and Embolism,"* by Mr. Maurice Lee. To be illustrated by a film.

Royal Army Medical College.—At Lecture Theatre, John Islip Street, London, S.W., October 12, 5 p.m., *"The History of Smallpox in the British Isles,"* by Sir William MacArthur.

●Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.—October 12, 5 p.m., *"Acute Intestinal Obstruction,"* by Mr. Grant Massie; 6.15 p.m., *"Surgery of the Adrenal,"* by Mr. L. R. Broster.

●Royal College of Surgeons of England: Faculty of Anaesthetists, Lincoln's Inn Fields, London, W.C.—October 12, 10 a.m., *"Anaesthesia for Thoracic Surgery,"* by Dr. A. I. Parry Brown; 11.30 a.m., *"Muscle Relaxants,"* by Dr. T. Cecil Gray; 2.30 p.m., *"Anaesthesia for Thoracic Surgery,"* by Dr. A. I. Parry Brown; 4 p.m., *"Muscle Relaxants,"* by Dr. T. Cecil Gray.

University College.—At Anatomy Theatre, Gower Street, London, W.C., October 12, 1.15 p.m., *"Man as a Subject for Scientific Study,"* by Professor J. Z. Young, F.R.S.

Friday

Edinburgh University.—At Anatomy Lecture Theatre, University New Buildings, Edinburgh, October 13, 5 p.m., *"The Present Status of Cortisone and A.C.T.H. in General Medicine,"* Macarthur postgraduate lecture by Dr. Philip S. Hench (Minnesota, U.S.A.).

Institute of Ophthalmology (University of London), Judd Street, London, W.C.—October 13, 5.30 p.m., *"Detachment Operations other than Diathermy,"* by Mr. A. Lister.

●Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.—October 13, 5 p.m., *"Bone Sarcoma,"* by Sir Stanford Cade; 6.15 p.m., *"Fractures of the Femoral Shaft,"* by Mr. H. L. C. Wood.

●Royal College of Surgeons of England: Faculty of Anaesthetists, Lincoln's Inn Fields, London, W.C.—October 13, 10 a.m., *"Principles of Anaesthetic Apparatus,"* by Dr. H. G. Epstein; 11.30 a.m., *"The Circulation During Anaesthesia,"* by Professor E. A. Pask; 2.30 p.m., *"Principles of Anaesthetic Apparatus,"* by Dr. H. G. Epstein; 4 p.m., *"The Circulation During Anaesthesia,"* by Professor E. A. Pask.

Royal Medical Society, 7, Melbourne Place, Edinburgh.—October 13, 8 p.m., *"Diseases of the Cotton Industry,"* dissertation by Dr. J. G. E. Smith.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Macphail.—On September 11, 1950, at Queen Charlotte's Hospital, to Dr. Margarett Macphail (formerly Hutchinson), wife of Dr. D. S. Macphail, a daughter.

Parkes Bowen.—On September 23, 1950, to Sheila (formerly Robinson), wife of Dr. David Parkes Bowen, a daughter—Penelope Susan.

Whitehouse.—On September 20, 1950, at Ashleigh, Gosforth, Newcastle-upon-Tyne, to Joan (formerly Tully), wife of Dr. Dennis Whitehouse, a brother for Peter—Michael David.

DEATHS

Abercrombie.—On September 30, 1950, at Plymouth, Massachusetts, Peter Henderson Abercrombie, M.D., of Putney Hill, London, S.W., aged 83.

Ball.—On September 25, 1950, at University College Hospital, London, W.C. Cecil Glyn Ball, M.B., B.S., C.P.H., of 213, Everton Drive, Stanmore, Middlesex, aged 30.

Edington.—On September 23, 1950, at 21, Brunswick Square, Penrith, Daniel Charles Edington M.D.

Ferguson.—On September 27, 1950, Robert Ferguson, M.D., of Albury Nook, South Eden Park Road, Beckenham, Kent, late of Ongar, Essex, aged 81.

Garner.—On September 16, 1950, at "Brookfield," Irlam Road, Flixton, Manchester Charles Garner, M.D., aged 75.

Gloyne.—On September 25, 1950, Stephen Roodhouse Gloyne, M.D., D.P.H., of 190, Chiltern Court, London, N.W.

Harris.—On September 16, 1950, at the London Hospital, Charles Harris, L.R.C.P.&S.Ed., D.P.H., of 44, Carden Avenue, Patcham, Brighton, aged 65.

Humphery.—On September 22, 1950, at Stradbroke Priory, near Diss, Norfolk, Geoffrey Per y Humphery, M.B., C.M., Brevet Lieutenant-Colonel, R.A.M.C., retired, aged 83.

Jarratt.—On September 19, 1950, at 14, St. James' Road, Bridlington, Yorks, Alfred Kaye Jarratt, M.B., C.M., aged 82.

Leech.—On September 19, 1950, at Chadlington House, Victoria Park, Manchester, Ernest Bosdin Leech, M.D., F.R.C.P., aged 75.

Leys.—On September 15, 1950, at "Culdearn," Grantown-on-Spey, Morayshire, John Leys, M.D., aged 85.

Pursiow.—On September 20, 1950, at 65, Sir Harry's Road, Edgbaston, Birmingham, Charles Edwin Pursiow, M.D., aged 89.

Rawlence.—On September 17, 1950, following an operation, Harold Ernest Rawlence, O.B.E., M.D., F.R.C.S.Ed., of Stoford House, Stoford, near Salisbury, Wilts.

Swyer.—On September 21, 1950, at the Queen Mary Hospital, Millbank, London, S.W., James Edward Swyer, M.R.C.S., L.R.C.P., Colonel, A.M.S.

Walters.—On September 16, 1950, William James Walters, M.R.C.S., L.R.C.P., of 185, Whitehall Road, Gateshead, late of Bryn Road, Swansea, aged 59.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Diastolic Murmurs

Q.—*How can the "innocent" diastolic murmur be diagnosed, and what is its significance?*

A.—Strictly speaking, there is no such thing as an innocent diastolic murmur. There are functional diastolic murmurs which are innocent in the sense that they do not denote valve disease; on the other hand, they may indicate something even more serious. For example, practically all pulmonary diastolic murmurs are functional and depend upon dilatation of the pulmonary artery and valve ring. A functional aortic diastolic murmur occurs in about 10% of cases of severe hypertension for similar reasons. A functional mitral diastolic murmur may be heard in patent ductus arteriosus, ventricular septal defect, and occasionally in thyrotoxicosis, and signifies a greatly augmented mitral blood flow. There is no difference in the timing and quality of such functional murmurs from those due to organic disease of the valve, but the clinical circumstances are different. The correct diagnosis is thus arrived at only after a full consideration of all the features of the case, not just by auscultation alone.

A soft respiratory murmur may occasionally be heard in diastole at the left sternal border, and this of course is innocent. It is difficult to hear, varies with respiration, and may have an unusual relationship to the second heart sound as compared with intracardiac murmurs. A soft pericardial friction rub in diastole may also be mistaken for a diastolic murmur.

Prickly Heat

Q.—*What is the modern specific treatment, if any, for prickly heat?*

A.—There is no truly specific treatment for prickly heat. The most important thing to do is to supply animal or vegetable fat to the epidermis. This is best done by rubbing in daily ung. adipis lanae hydrosi. The second thing is to use a mild antiseptic to kill the invading staphylococci. Brilliant green is the least irritating and can be incorporated in the ointment, but its staining properties make it objectionable to use. An alternative would be to swab once daily with a 1:1,500 solution of mercury perchloride. Anything that removes the natural grease from the skin must be avoided; soap should not be used more than once daily. Swabbing with alcoholic solutions is to be condemned.

Testing Visual Acuity in a Small Surgery

Q.—*I have a surgery which is not 6 metres (19.7 ft.) long, and I wish to use my Snellen's test-type card. Can you please tell me: (1) Is a mirror-image card available so that I may put the card 13 ft. (3.97 m.) from the mirror and the patient 7 ft. (2.14 m.) from the mirror? (2) Is there any simple way of reading my test-type card at a distance of 13 ft., instead of at 20 ft. (6.1 m.), and expressing the result in the standard way?*

A.—(1) Special types are made by the dispensing opticians who supply ophthalmic apparatus, with letters reversed for reading in a mirror. The results are satisfactory, but in a few cases a psychological effect is produced which makes the record of visual acuity a little inaccurate. In some cases it is possible to put a window fairly high up on the wall facing the patient with the usual test-types attached high up on the opposite wall in the adjoining room or passage, the card being moved by cords from the examiner's position. By this means it may be possible to get the full 6 metres.

(2) No. But the visual acuity at 13 ft. can be recorded fairly correctly as 4/12 and 4/18, etc. These figures, however, cannot accurately be converted to, say, 6/18 or 6/24.

Barbiturates and Loss of Memory

Q.—*Is it common for patients taking nightly doses of "seconal" ½ gr. (194 mg.) or "sodium amytal" 3 gr. (32 mg.) over long periods to suffer from some degree of loss of memory? If so, what is the best alternative treatment?*

A.—It is not common for patients taking seconal or sodium amytal in the moderate doses mentioned to suffer from disturbances of memory. These barbiturates are relatively short-acting ones, and have no cumulative effects even if taken for prolonged periods, provided the renal function is not profoundly depressed. The best alternative hypnotic to barbiturates is chloral hydrate in a dose of 10–20 gr. (0.65–1.29 g.) well diluted.

Amphetamine during Lactation

Q.—*Is there any contraindication to the use of an amphetamine preparation in a nursing mother as an aid to weight reduction? Would the milk contain sufficient of the drug to cause the baby to be restless? Is there any objection to starting the course of amphetamine at the beginning of lactation?*

A.—A nursing mother should not use an amphetamine preparation as an aid to weight reduction. It is very likely that the drug would enter the milk and that the baby would be restless and wakeful. To start the course of amphetamine at the beginning of lactation is the worst time, for then the baby is most easily upset.

Excessive Libido

Q.—*What is the best method of reducing the libido of a healthy man, aged 23? There has been no relief with carbromal 10 gr. (0.65 g.) given in the afternoon, nor with phenobarbitone 1 gr. (65 mg.) t.d.s. and butobarbitone 1½ gr. (97 mg.) at tea-time. My patient fears that the frequency with which he indulges in intercourse is undermining his health.*

A.—It would appear that the patient is asking that his libido should be reduced because he himself believes that the frequency of intercourse is "undermining his health." In other words, the patient and not the doctor is deciding that treatment is necessary. Whilst it is reasonable to give stilboestrol to a patient with phthisis who has a haemoptysis after having intercourse, this treatment is not indicated in the present case. Normal intercourse does not undermine a patient's health, and excessive intercourse only makes him tired. The right treatment here is to get rid of the patient's fears and not of his libido.

Immunization of Allergic Children

Q.—*What is the best procedure to adopt in immunizing children who give a history of asthma and similar allergic conditions?*

A.—The important point is that these children should be immunized with preparations which do not contain serum. They can be immunized with alum-precipitated toxoids in the usual way.

Methyl Bromide and Ethylene Oxide Poisoning

Q.—*Methyl bromide and ethylene oxide are both extensively used for the fumigation of stored products. What is the immediate first-aid treatment to an operator who has been exposed to either of these gases? What are the physiological changes and pathological findings in cases of poisoning?*

A.—The concentrations of methyl bromide and ethylene oxide commonly used for fumigation are so small that poisoning from inhalation of the vapour is unlikely to occur. Wyers (*Brit. J. industr. Med.*, 1945, **2**, 24) describes the causes of poisoning from methyl bromide; he points out that careless handling of the materials and failure to appreciate the risk of poisoning are common among workmen. Men engaged in fumigating should work in pairs, and not singly. Protective clothing must include masks and gloves, and rooms should be thoroughly ventilated after fumigation. Periodic medical examination of workers assists in detecting early symptoms and in drawing attention to possible sources of exposure. Workers who experience symptoms such as headache, smarting of the eyes, loss of appetite, abdominal discomfort, or numbness of the feet should be removed at once from further exposure and kept at rest in bed under close observation for several days. Delayed symptoms, including visual disturbances such as difficulty in focusing and amblyopia, apathy, drowsiness, and epileptiform attacks, may occur from 2 to 16 hours after exposure, and death from pulmonary oedema has occurred after 48 hours. There is no specific treatment once these symptoms have developed. Liquid methyl bromide causes burns with marked vesication, redness and swelling of the superficial layers of the skin. Washing in weak sodium carbonate solution, by decomposing the methyl bromide, may help to prevent skin lesions. Chlorbutol ointment relieves the pain of burns.

Little is known about the physiological effect of methyl bromide. There is an increase of non-volatile bromide in the blood (normal 0–1.5 mg. %) and in the cerebrospinal fluid. Methyl bromide cannot be detected in the tissues, and there is no evidence of a cumulative effect nor of acquired sensitivity to it. Necropsy reveals congestion and cloudy swelling of the kidneys and liver, congestion and oedema of the lungs, and oedema of the brain with perivascular haemorrhages (Clarke *et al.*, *Brit. J. industr. Med.*, 1945, **2**, 17).

Ethylene oxide is not particularly toxic to man. It is an irritant gas and causes irritation of the eyes and nose with blood-stained watery discharge from the nostrils. In experimental animals the principal changes at necropsy are found in the respiratory system (Fairhall, *Industrial Toxicology*, Baltimore, 1949, p. 341). In high concentrations the irritant properties of ethylene oxide give warning of its presence. First-aid treatment consists in removal from exposure, rest in bed, and observation for 48 hours until the risk of delayed pulmonary oedema is past.

Corona Diaphragmatica

Q.—*A transverse row of venules is frequently seen running across the front of the chest wall, more usually on the left. Each venule runs more or less vertically, and the condition suggests some obstruction to the deep veins at the level of the diaphragm. What is the significance of this condition?*

A.—A band of dilated superficial venules, embracing the thorax at a level roughly corresponding with that of the diaphragmatic attachment, is commonly seen in males above middle age. It has been termed the "corona diaphragmatica." This phenomenon is compatible with health and does not indicate venous obstruction or any other disease process.

Antihistamine Drugs and Peptic Ulcer

Q.—*Is anything known about the value of antihistamine drugs in the treatment of peptic ulcers?*

A.—Unfortunately the antihistamine drugs have the effect of increasing rather than decreasing the amount of acid secreted by the stomach. This has been studied by Doran (*Lancet*, 1947, **2**, 490) and by Deutsch (*Klin. Med., Wien*, 1947, **2**, 1113). In one of Doran's patients with a duodenal ulcer there was a huge increase in the acidity of the fasting contents after 300 mg. of "benadryl" had been administered. It has been shown that benadryl does not protect guinea-pigs against the development of ulcer after the implantation of histamine in beeswax (Crane *et al.*, *Amer. J. digest. Dis.*, 1947, **14**, 56).

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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